

**idn** E-Briefing Papers

# Shifts in World Geopolitics: Cooperation and Competition in the Atlantic

25<sup>th</sup> February 2022

International Seminar

Ponta Delgada, Azores



Os *E-briefing Papers* do Instituto da Defesa Nacional visam proporcionar o acompanhamento de temas e debates atuais nos planos da segurança internacional e das políticas de defesa nacional, incluindo resultados da investigação promovida pelo IDN, sobretudo na sua vertente aplicada e de apoio à decisão política, bem como contributos de outros analistas e investigadores associados do Instituto.

## **FICHA TÉCNICA**

### **Diretora**

Isabel Ferreira Nunes

---

### **Coordenação Científica**

Isabel Ferreira Nunes

---

### **Editor**

Luís Cunha

---

### **Centro Editorial**

António Baranita e Luísa Nunes

---

### **Propriedade, Edição e Design Gráfico**

Instituto da Defesa Nacional

Calçada das Necessidades, 5, 1399-017 Lisboa, Portugal

**Tel.** + (351)211 544 700

**Fax:** + (351)211 548 245

**Email:** [idn.publicacoes@defesa.pt](mailto:idn.publicacoes@defesa.pt)

<http://www.idn.gov.pt>

**ISSN:** 2184-8246

---

Conference proceedings of the international seminar organized by the Atlantic Centre, the National Defence Institute and the University of the Azores, on 25 February 2022 in Ponta Delgada, Azores.

**Contributors:**

Ana Teresa Alves, Helena Carreiras, Licínia Simão, Sónia Ribeiro, Mónica Herz, Maxine Burkett, Miguel Belló Mora, Christian Bueger, Tobias Liebetrau, Luís Andrade, Carolina Rêgo Costa, Luís R. Santos, Pedro Faria e Castro

**Abstract:**

This IDN *E-Briefing Paper* intends to disseminate the results of the International Seminar “Shifts in World Geopolitics: Cooperation and Competition in the Atlantic”, organized by the Atlantic Centre, the National Defence Institute, and the University of the Azores, on 25 February 2022 in Ponta Delgada, Azores. This seminar aimed to identify areas of convergence and divergence of interests in the face of a rapidly evolving Atlantic. It also provided important clues on how to enhance the strategic position of Azores in line with the current geopolitical context.

**Resumo:**

Este IDN *E-Briefing Paper* pretende divulgar os resultados do seminário internacional “Shifts in world geopolitics: cooperation and competition in the Atlantic”, organizado pelo Centro do Atlântico, o Instituto da Defesa Nacional e a Universidade dos Açores, a 25 de fevereiro de 2022 em Ponta Delgada, nos Açores. Este seminário visou identificar áreas de convergência e divergência de interesses, face a um Atlântico em rápida evolução. Procurou também fornecer indicações importantes sobre como valorizar a posição estratégica dos Açores, em consonância com o atual contexto geopolítico.

## Table of Contents

Contributors and Abstract/Resumo	2
Concept Note	4
Program	5
Opening Remarks by Prof. Ana Teresa Alves, Vice-rector of the University of the Azores	7
Opening Remarks by Prof. Helena Carreiras, Director of the National Defence Institute	8
Opening Remarks by Prof. Licínia Simão, Coordinator of the Atlantic Centre	10
<b>I Panel</b>	
<b>The Atlantic in World Geopolitics</b>	13
Europe and the Blue Economy in the Atlantic <i>Sónia Ribeiro</i>	14
Systemic Competition and Cooperation in the South Atlantic <i>Mónica Herz</i>	21
The United States and the Atlantic <i>Maxine Burkett</i>	23
<b>II Panel</b>	
<b>The Azores and Atlantic Security</b>	26
Science Diplomacy and the Atlantic <i>Miguel Belló Mora</i>	27
Maritime Security in the Atlantic: the Vulnerabilities of Subsea Data Infrastructure <i>Christian Bueger and Tobias Liebetrau</i>	34
The Azores and Transatlantic Relations <i>Luís Andrade</i>	42
Space for the Atlantic <i>Carolina Régo Costa</i>	45
The Azores Space Structure Mission <i>Luís R. Santos</i>	50
Closing Remarks by Prof. Luís Andrade, Centre for Humanistic Studies, University of the Azores	54
Closing Remarks by Prof. Helena Carreiras, Director of the National Defence Institute	55
Closing Remarks by Prof. Licínia Simão, Coordinator of the Atlantic Centre	56
Closing Remarks by Dr. Pedro Faria e Castro, Undersecretary for the Presidency of the Regional Government of the Azores	58

## Concept Note

In recent years, the international system has seen a return to dynamics of competition between great powers for key regional spaces, which are relevant to the maintenance and protection of global flows. In this context, the Atlantic tends to emerge as an area of projection for Atlantic and non-Atlantic powers, with impacts on regional security. The domains where this competition takes place – from cyber to the Arctic, from military alliances to the management of common goods – accumulate successively in the face of sometimes opposing and/or competitive agendas that go beyond the mere sharing of common maritime spaces.

The strategic Atlantic space thus remains crucial for international security. The strategic location of the Azores, as well as the size and security conditions of the Lajes Base on Terceira Island, have merited particular attention in recent years. Although developments in military technology have changed the use of this air base, Lajes has not lost its strategic importance and the Azores archipelago continues to be central to Atlantic security. In a context of growing international competition in the Atlantic, it is of the utmost importance to understand the added value of this strategic positioning for a specific set of activities that are now essential to our understanding of security. This includes matters related to maritime surveillance, the exercise of sovereignty at sea and the sustainable exploitation of natural resources, but also aspects related to communication systems (submarine cables or satellites) or cooperation between islands and Atlantic spaces, which are so important for regional security.

This seminar aims to identify areas of convergence and divergence of interests, and areas where these same interests may prove to be asymmetric in the face of a rapidly evolving Atlantic. By understanding the scope of possible areas of convergence, any new transatlantic initiatives can be developed more easily. By identifying areas of divergence, any disputes can be better avoided. And by pinpointing areas of asymmetric interests, any priorities may also be better managed and eventually mitigated. This exercise will provide important clues on how to enhance the Azores and its territory in line with this new context.

## **Program**

### **14h00 – Opening ceremony**

Ana Teresa Alves – Vice-Rector, University of the Azores

Helena Carreiras – Director, National Defence Institute

Licinia Simão – Coordinator, Atlantic Centre

### **14h20 – I Panel: The Atlantic in world geopolitics**

*This panel seeks to position the Atlantic area vis-à-vis the ongoing transformations in world geopolitics. It will address topics such as the Atlantic and world trade, the Atlantic and political-military alliances; the Atlantic and technological cooperation, among other issues crucial to the balance of world power.*

**Chair:** Carlos Amaral – Center for Humanistic Studies, University of the Azores

Sónia Ribeiro – Catholic University of Portugal

Mónica Herz – Pontifical Catholic University of Rio de Janeiro (PUC Rio)

Maxine Burkett – U. S. Department of State's Bureau of Oceans and International Environmental and Scientific Affairs

Timothy Walker – Institute for Security Studies (ISS Africa)

### **16h30 – Break**

### **16h45 – II Panel: The Azores and Atlantic security**

*This panel addresses the added value of the strategic positioning of the Azores for a set of activities that are today essential to our understanding of security, namely issues concerning maritime surveillance, the exercise of sovereignty at sea and the sustainable exploitation of natural resources, but also aspects related to communication systems (submarine cables or satellites) or with cooperation between islands and Atlantic spaces, so important for regional security.*

**Chair:** Miguel Rocha – Center for Humanistic Studies, University of the Azores

Miguel Belló Mora – Atlantic International Research Centre (AIR Centre)

Christian Bueger – University of Copenhagen

Luís Andrade – Center for Humanistic Studies, University of the Azores

Carolina Rêgo Costa – Portuguese Space Agency-Portugal Space

Luis Santos – Mission Structure of the Azores for Space (EMA-Space)

**18h45 – Closing ceremony**

Luís Andrade – Center for Humanistic Studies, University of the Azores

Licinia Simão – Coordinator, Atlantic Centre

Helena Carreiras – Director, National Defence Institute

Pedro Faria e Castro – Undersecretary for the Presidency of the Regional Government of the Azores

## **Opening Remarks by Prof. Ana Teresa Alves, Vice-rector of the University of the Azores**

Doctor Licínia Simão, Coordinator of the Atlantic Centre,  
Doctor Helena Carreiras, Director of National Defence Institute,  
Other Participants in this event,

Good afternoon to you all.

Let me start by thanking the organisers for having chosen our University to welcome this event and for inviting our rector, who unfortunately could not come, to be here today in the opening session of this international seminar about Shifts in Geopolitics: Cooperation and Competition in the Atlantic, a topic that, for one reason or another, is always very hot.

Secondly, I would like to greet everyone who is participating in the seminar or attending it in person or by Zoom.

Given the location of the University and the islands of the Azores, issues such as the Atlantic and world trade, the Atlantic and technological cooperation and, in particular, Atlantic security, among others, gain special relevance.

I hope that the seminar, the exchange of ideas and the debate will be fruitful and, that at the end of the day, the results will have been worth it.

On the part of the University, the doors remain open to other opportunities.

Once again, thank you all and I wish you a great day.

## **Opening Remarks by Prof. Helena Carreiras, Director of the National Defence Institute**

Prof. Ana Teresa Alves, Vice-Rector of the University of the Azores,  
Prof. Licínia Simão, Coordinator of the Atlantic Centre,  
Distinguished guests and participants,

Good afternoon.

Let me begin by expressing my sincerest appreciation for having the opportunity to join you today in this international seminar in Ponta Delgada, São Miguel Island, one of the most beautiful places in the world.

Allow me to extend my deepest thanks to our host institution, the University of the Azores, in the person of its Vice-Rector, Prof. Ana Teresa Alves, but also to the Centre for Humanistic Studies, for welcoming and providing us with all the necessary support to bring this event to fruition. The National Defence Institute (IDN) has cooperated with the University on countless initiatives over the years, and we look forward to other partnerships of this kind, where both institutions are able to imprint their combined expertise and resources on to the local and international communities. A particular welcoming word is also owed to the participants of the Security and Defence Intensive Course (CISED) that IDN regularly organises in the Azores. In fact, its second module concludes today with the organisation of this very seminar. This course aims to contribute to the awareness and training of civil servants, representatives of civil society organisations, as well as those with the potential to perform relevant functions in matters related to national security and defence. It is also intended to promote better articulation among local decision-makers in a comprehensive and integrated manner. To all the course participants with us here in the auditorium and to those joining us online from other islands, thank you for your interest and your active participation.

On that note, I must also thank Colonel Carlos Coutinho Rodrigues and all the staff at IDN, Lt Colonel Francisco Mateus and Professor Pedro Seabra, who is IDN's active link to the Atlantic Centre, as well as the staff from the Ministry of Defence, for making the integration of this seminar into the program of CISED so smooth and successful.

Ladies and gentlemen,

We are all well aware of the challenges that the current international order faces nowadays (and the recent events are here to painfully remind us). Dynamics of competition are increasingly

superseding those of cooperation, thus appearing to call into question the very rationale underpinning this seminar. However, it is precisely the context of growing global tensions that makes it more sensible to understand the added value of the strategic positioning of key regions and locations for activities that are essential to our understanding of security worldwide. This includes matters related to maritime surveillance or the exercise of sovereignty at sea, but also aspects related to communication and cooperation within broader maritime spaces.

In this regard, the Atlantic stands out as more than deserving a specialised focus. We will therefore be hearing today from a diverse set of distinguished speakers, who will encourage us to think of such disparate issues as South-South cooperation, maritime and environmental protection, expanding space-related endeavours or wider scientific exchanges. These are operative anchors of a broader reflection on what the Atlantic holds in terms of challenges, but also, and perhaps more importantly, in terms of opportunities.

At the centre of it all, the strategic position of the Azores remains uncontested, for what the Atlantic is and will become in the coming future. For IDN, the Azores stands out as a key priority in our overall mandate. This seminar only further attests to the Institute's efforts in calling attention to its role in any debates concerning the limits of this oceanic space as well as the specific dynamics that lie within.

Allow me to conclude with some brief remarks on the Atlantic Centre. The National Defence Institute has been an active and vocal supporter of the project of the Atlantic Centre since its inception and is eager to help further consolidate and develop it. I would like to thank and underline the great work that has already been carried out, under the initial coordination of Brigadier-General Nuno Lemos Pires and now the dynamic and determined leadership of Professor Licínia Simão. The Atlantic Centre has gathered considerable momentum, in a clear demonstration of the collective demand and political will to move forward with such an initiative. In parallel, the partnership with IDN has also been met with a fast pace of its own and has already generated very concrete outputs. I would highlight, in particular, the first-ever Course on Maritime Security of the Atlantic Centre, which IDN helped to design and implement last May at Lajes Airbase, Terceira Island. We will be sure to repeat this experience next Spring, with a course thematically focused on linkages between Human Security and the maritime domain, at the same location.

I wish you all a very productive afternoon and I look forward to accompanying the discussions of the incoming panels with great interest.

Thank you.

## **Opening Remarks by Prof. Licínia Simão, Coordinator of the Atlantic Centre**

Vice-rector of the University of the Azores, Professor Ana Teresa Alves,  
Director of the National Defence Institute, Professor Helena Carreiras,  
Distinguished guests,

Over the course of the last three years, the Atlantic Centre has been developing as a unique initiative. Driven by the desire of the Portuguese Government to contribute to a peaceful and stable Atlantic, we, at the Ministry of National Defence, have begun to design, in close articulation with the Ministry of Foreign Affairs, a platform that can promote cooperative relations among all Atlantic nations, North and South.

Our activities are structured around three main vectors.

The first is Political Dialogue. We are today 19 countries, from all Atlantic continents, closely collaborating to develop a shared understanding of security concerns in this region and to respond to these concerns in a cooperative way that prevents tensions and improves the lives of our communities. Developing an integrated view of Atlantic security is not an easy feat, as many of you will know, but we believe Portugal is well placed to contribute to that goal, which is crucial to keep the Atlantic free from destabilizing external interferences. Last month, Portugal proposed a Roadmap for the development of the Centre, which has been endorsed by all partners and we will be working to implement this vision.

The second vector of our activity is related to Knowledge Production and Dissemination. Today's event contributes directly to this goal of producing updated knowledge on Atlantic security, of engaging the academic and expert communities in addressing these challenges, and ultimately contributing to sounder policy-making. Reaching out to students and young researchers, as well as to the broader communities, raising awareness of the importance of thinking about the sea is also a goal we share. The so-called "seablindness" is something we wish to overcome and to contribute to an integrated view of maritime security, which addresses insecurity in land and at sea. I would add, on this topic, that the issues relating to the oceans are quite vast, as the topics of our seminar sought to make clear. As Portugal sponsors the UN Oceans Conference this summer, we are pleased to contribute to more and better knowledge of our oceans.

The final vector we work on at the Atlantic Centre is Defence Capacity Building. Building on the vast experience of the Portuguese Armed Forces, we are working to identify the needs of coastal

states to respond to a fast-changing security environment. Needs vary greatly across the Atlantic, with sharp discrepancies between the North and the South, resulting from historical divisions of our shared Atlantic space. This requires continuous assessment of the gaps in existing assistance, of the added-value that the Centre can bring to an already crowded space, and of the opportunities for dialogue with coastal states that help shape our capacity-building activities to existing needs and shared interests. I would highlight, in that regard, the recent report published by the Atlantic Centre, and which you can find online on our webpage, addressing the European Union's capacity-building assistance on maritime security in the South Atlantic. A second report will be presented in the coming weeks, systematizing these gaps in capacity-building efforts. These are very important tools for policy-making. I would also refer to the II Course on Maritime Security, which the Centre will again host in the Terceira Island, in May, which we are developing in collaboration with partners from across the Atlantic, including the National Defence Institute, to make sure we have a syllabus that responds to different needs.

The Centre is actively engaged in promoting the centrality of the Atlantic at a time when Asia Pacific continues to rise in importance for the United States, the European Union and its member states; at a time when Eastern Europe is again dealing with Russia's aggressive policies towards its neighbours. But the Atlantic is not free from the impacts of Great Power competition, nor should the engagement of Atlantic nations in its security be taken for granted.

This seminar is an opportunity to keep our ideas about the Atlantic sharp and updated, and I hope today's discussions will be of interest to your own reflections.

Allow me just a final word of appreciation to our partners in today's seminar. First to the University of the Azores and the Center for Humanistic Studies, particularly to Vice-Rector Ana Teresa Alves for being here today and to Professor Luís Andrade, for the unwavering support you have given to this initiative. Professor, it has been a pleasure to work with you and I hope we can deepen and extend our collaboration to more permanent initiatives. Secondly, to the National Defence Institute, for the permanent support the Atlantic Centre initiatives have received from you. Doctor Pedro Seabra and Colonel Coutinho Rodrigues have been key to successfully integrating this seminar in IDN's 7<sup>th</sup> Intensive Course on Security and Defence in the Azores. Thirdly, I wanted to thank the Regional Government of Azores for all the efforts in supporting this initiative, particularly to all the staff in the cabinet of the Regional Under-secretary of the Presidency.

But we are particularly indebted to our speakers for accepting our invitation and for joining us today, in-person and online. We are thrilled to have such knowledgeable and distinguished panelists sharing their views with us this afternoon. We are particularly honoured to have US

Deputy Assistant Secretary Maxine Burkett joining us from Hawaii, once more confirming the strong support the US gives to the Atlantic Centre and its initiatives.

I hope our audience, here in Ponta Delgada and online, can benefit from this reflection and can engage in the discussion.

I wish you all a fruitful event.

**I Panel:**

**The Atlantic in World Geopolitics**

## **Europe and the Blue Economy in the Atlantic**

**Sónia Ribeiro**

*Research Centre of the Institute for Political Studies, Universidade Católica Portuguesa (CIEP-UCP)*

### **Introduction**

This brief presentation aims at producing an analysis focused on the Atlantic Blue Economy, with a deepening on the European reality, in the context of the EU. Its main objective is to provide a comprehensive and integrated understanding, considering the main results achieved in recent years, demonstrating the current relevance of blue economy in the North Atlantic economies.

This implies that an enormous proportion of blue economy's potential – and achievements – will not be tackled, due to the options the time available has made necessary: those referring to the South Atlantic Blue Economy. We shall discuss that in new opportunities as they emerge.

### **The Ocean in the World Economy**

That 'The ocean covers 71% of our planet by surface area and includes 96% of the water on earth by volume' is a commonly used statement on a reality that could not have been ignored in the past, nor can it be minimized in the present because it will not be overlooked in the future.

We now know that the Ocean plays a critical role in cooling the planet, making it habitable; produces over half the oxygen we breathe and absorbs 50 times as much carbon dioxide as the atmosphere, and an enormous attention is devoted to it because of this knowledge we now possess, but throughout history, this knowledge was not available. Nonetheless, the Ocean was also relevant – as a source of natural resources, a way to discover and conquer new lands, and to trade goods.

These activities continue to play a decisive role in our economies, since the Ocean is still a primary source of protein for over a billion people; and serve as a highway that carries more than 90% of the goods and materials that move internationally.

In our current economic system, based in global flows of goods and capitals, shipping routes on the various existing maritime communication lines demonstrates a highest density of flows between the two development hubs in the North Atlantic - USA and Europe, between the Pacific Poles - USA, Japan and China, and in the South Asia region, but we can also see significant South-North maritime traffic, which portrays the density of traffic between Brazil and Europe, but also,

via South Africa, to the Indian Ocean. But blue economy is not only about international maritime trade.

The value of the Ocean economic sectors has been estimated (2015)<sup>1</sup> at about 3 trillion USD annually – 5% of global GDP, equaling the size of the fifth economy in the world.

There is, indeed, a growing relevance of the Ocean in world economy in the past couple of decades, and that is greatly due to three main reasons: (1) the development of technology that allows for the presence and operation on the high seas and the development of new activities and ‘new’ uses of the ocean; (2) the need to exploit new sources of raw materials in order to maintain or further enhance economic performance globally; (3) and because science has brought to light knowledge on the fundamental role the Ocean has in regulating life on earth, and how exploitation in the past decades has accelerated a change in natural conditions that is enforcing a climate change in the planet.

### **Blue Economy in the North Atlantic: Recent Achievements**

Though providing an insight on USA’s and Canada’s reality, we shall focus on the EU Blue Economy in assessing blue economy in the North Atlantic. We shall also present a synthetic view of Blue Economy relevance to the Portuguese economy in the past decade and its achievements. To understand the relevance of blue economy to the Canadian economy, one could simply recall that its coastal territory touches 3 oceans - the Pacific, the Arctic and the Atlantic – and its coastal community (population living within 10 km of those 3 coasts) totaled 4.8 million people in 2016. In fact, economic activities dependent on the Ocean make a substantial contribution to the Canadian economy<sup>2</sup>. In Canada, as in many other regions of the globe, fisheries and naval installations were the first to develop, followed by fish processing, shipbuilding, and marine transportation, providing a basis for economic development and growth on all three of Canada's coasts. In recent decades, new marine economic activities emerged, including tourism, aquaculture, biotechnologies, specialized manufacturing, and offshore oil and gas exploration and development. A wide range of service industries supports these activities. Together, they create substantial opportunities as well as challenges, emerging from increased and oftentimes competing uses of ocean space, including the need to protect and conserve Canada’s ecosystems and biodiversity.

---

<sup>1</sup> UNCTAD (2015) and UNITED NATIONS (2015). Sustainable Development Goals fact sheet.

<sup>2</sup> Sylvain Ganter *et al.* (2021). Canada’s oceans and the economic contribution of marine sectors, EnviroStats, Catalogue no. 16-002-X. Release date: July 19. Published by authority of the Minister responsible for Statistics Canada, available at <https://www150.statcan.gc.ca/n1/pub/16-002-x/2021001/article/00001-eng.htm>

In 2018<sup>3</sup>, activities linked to blue economy represented 1.6% of both Canada's total employment and gross domestic product (GDP) estimates. The contribution of marine sectors was particularly high in Newfoundland and Labrador (employment: 16.8%, GDP: 30.0%), Nova Scotia (employment: 13.3% and GDP: 13.5%), and Prince Edward Island (employment: 9.3%, GDP: 10.3%).

The main driver of the marine economy was the private sector, namely in fishing and seafood, transportation, and oil and gas, accounting for 79.6% of total employment and 83.1% of total GDP contribution.

Unlike other blue economies – notably the USA and the EU blue economies, where tourism is the sector that offers more employment – transportation was the most relevant sector to employment (23.0% of total employment), followed by fishing and seafood (21.8%), and tourism and recreation (21.3%). In GDP contribution, fishing and seafood (21.1% of total GDP), transportation (20.8%), and oil and gas (20.8%) were the most relevant sectors.

Proving its resilience, measured as a share of total employment and GDP, the contribution of marine sectors to the Canadian economy remained relatively stable from 2014 to 2018, the share of employment having increased slightly (6.5%) from 1.5% in 2014 to 1.6% in 2018, while the share of total GDP, meanwhile, remained stable at 1.6% in both years.

### **Blue Economy in the USA<sup>4</sup>**

The first official USA Marine Economy Satellite Account statistics were released in 2021 by the U.S. Bureau of Economic Analysis.

Though they show a similar pattern of growth as to the Canadian blue economy, USA's blue economy internal structure is very different from its northern neighbour.

In fact, the data released show that the marine economy accounted for 2.4 million jobs and for 1.9% (US\$397 billion) of US GDP in 2019, growing 4.2% in 2019 from 2018 – near doubling the growth for the overall U.S. economy (2.2%). Real gross output, compensation, and employment also all grew faster in the marine economy than in the overall economy in 2019<sup>5</sup>.

In USA's blue economy, a major role is played by Tourism, since this sector (Tourism and recreation, including activities such as coastal trips and travel, offshore boating, and offshore

---

<sup>3</sup> Government of Canada (n.d.). Marine Sectors in Canada Summary Tables | Fisheries and Oceans Canada, available at <https://www.dfo-mpo.gc.ca/stats/maritime-eng.htm>

<sup>4</sup> Daria Solovieva (2021). What's holding back America's blue economy? *Fortune*, 3:00 PM GMT+1, September 27, available at <https://fortune.com/2021/09/27/whats-holding-back-americas-blue-economy/>

<sup>5</sup> U. S. Bureau of Economic Analysis (2021). Marine Economy Satellite Account, 2014-2019, News Release, available at <https://www.bea.gov>

recreational fishing) had a major part on that growth, accounting for 35.3% of marine economy gross output. US national defense and public administration was also of relevance (27.1 %), as well as minerals and offshore (including offshore oil and gas), which accounted for 14.0%. Tourism and recreation were the largest marine economy activities in 2019, accounting for US\$234.9 billion of gross output.

Other relevant sector for USA's blue economy were Marine transportation and warehousing, which accounted for US\$63.8 billion (9.6 %) of gross output in 2019; while non recreational ship and boat building accounted for US\$31.2 billion of gross output in 2019, registering a sturdy increase of 37.2 % from the previous year, making it one of the fastest-growing marine economy activity.

According to the 2021 US maritime satellite account, and in contrast to Canada, the government sector was the largest contributor to the US marine economy in 2019, accounting for 31.3% (US\$124.3 billion) of all marine economy activity. It was also the largest industry sector for compensation (US\$76.0 billion) and for employment (647,000). The second most relevant sector to blue economy was real estate and rental and leasing, accounting for US\$55.5 billion of value added.

Transportation and warehousing was the second-largest industry for compensation (US\$21.3 billion), with 43.3% of this value coming from the category "other transportation and support activities" which includes scenic and sightseeing transportation. Accommodation and food services was the second-largest industry for employment (464,000) in 2019.

Differences on the structure of the blue economy clusters are thus of relevance and may produce different readings on the relevance of the blue economy. In the EU, a common integrated approach, followed by the member states, has limited this effect by providing a common framework to all.

## **Blue Economy in the EU**

The EU and other countries around the world, have thus started to look to the ocean in a different, integrated approach, focused on strengthening established economic activities – marine living resources; marine non-living resources; marine renewable energy (offshore wind); port activities; shipbuilding and repair; maritime transport or coastal tourism – and developing new/emerging economic activities such as ocean energy; bioeconomy & biotechnology; desalination; marine minerals; maritime defence, security and surveillance; research and education and infrastructure on a basis of an environmentally sustainable blue economy.

Though following 2008 crisis the relative size of the EU Blue Economy in terms of GVA and employment, with respect to the EU overall economy, has decreased from 2009 – which may be due to the importance of coastal tourism, (45% of the GVA; 64% of the employment) – in 2018 the EU Blue Economy established sectors main indicators also show encouraging figures.

However, the COVID-19 pandemic represented a major shock for the global and the EU economies and had also impact on blue economy performance.

Indeed, COVID-19 economic crisis' impact assessment on Blue Economy<sup>6</sup> shows that EU Blue Economy will be more affected by the crisis than the overall EU economy, but different sectors will be differently impacted, and in the end, the EU Blue Economy will grow faster when the economy eventually recovers, offering important investment opportunities.

The sectors that suffered most severely in 2020, were all the established sectors, except for marine renewable energy, where the impact was medium. Although the Living resources, Non-living resources, Port activities and Maritime transport sectors suffered strongly (even if some of those activities suffered less than others), they were all foreseen to recover promptly.

In fact, in June 2021, the European Commission expected most sectors to return to pre-COVID levels before 2022; only shipbuilding and repair was expected to recover in 2022, and only coastal tourism should recover to those levels later than that. Most of the emerging sectors suffered small overall impacts in 2020 and were all expected to recover swiftly.

This assessment is of utmost relevance, since EU Blue Economy established sectors are in fact major contributors to the EU Blue Economy. Considering those outlooks, we focus on pre-COVID results to acknowledge the dimension and evolution of those sectors in EU Blue Economy.

EU Blue Economy 2018 data<sup>7</sup> shows an increase in all major indicators from 2009. On these data we should notice that:

- Employment increase was largely driven by Coastal tourism, which saw a 20% rise (in 2018) in jobs compared to 2017.
- Marine renewable energy (production and transmission), which is still in a strong expansion phase given that it is a relatively young sector, saw the number of persons employed increase twenty-two times since 2009, from 383 persons to almost 9 000 persons in 2018.

---

<sup>6</sup> Comissão Europeia, Direção-Geral dos Assuntos Marítimos e das Pescas, Addamo, A., Calvo Santos, A., Carvalho, N., *et al.*, *The EU Blue Economy Report 2021*, Publications Office, 2021, available at <https://data.europa.eu/doi/10.2771/8217>

<sup>7</sup> European Commission, Directorate-General for Maritime Affairs and Fisheries, *The 2018 annual economic report on EU blue economy*, Publications Office, 2018, available at <https://data.europa.eu/doi/10.2771/305342>

- Remuneration per employee for the EU Blue Economy established sectors has increased steadily since 2009, peaking in 2015 (at €24 950 per employee) and falling slightly afterwards. However, average employment remuneration in 2018 was 14.2% higher than in 2009.

Noteworthy sectors to this overall performance were Living resources; Marine renewable energy (offshore wind); Blue bioeconomy and Desalination.

GVA data shows an acceleration in the growth of all sectors from 2013 onwards except for Non-living resources, whose GVA dropped by 62%.

The largest Blue Economy sector in the EU remains Coastal tourism, which reported an increase of 20.6% in GVA in 2018 compared to 2009.

Maritime transport and Port activities, increased by 12% and 14.5%, respectively.

Other sectors that contributed to growth were Living resources (+29%) and Shipbuilding and repair (+30%).

Employment was also recovering after the crisis – with respect to 2009, 2018 figures are very similar. The highest relative expansion was observed, in Maritime transport. In Shipbuilding and repair as well as in Living resources, employment has grown with respect to the minimum observed in 2013-2014, but it has not yet recovered to 2009 levels.

In Non-living resources, a significant declining trend is seen.

The four largest EU Member States (Spain, Germany, Italy and France) are the largest contributors to the EU Blue Economy for both employment (with a combined contribution of 53%) and GVA (a combined contribution of 61%)<sup>8</sup>.

Only Greece manages to come among these four countries by positioning second in the contribution to the EU Blue Economy in employment terms.

Other countries with significant contributions in terms of either employment or GVA include Greece, Portugal, the Netherlands, and Denmark.

Blue Economy exceeds 5% of the national GVA or employment in the insular Member States or those with archipelagos: Greece, Croatia, Malta, Cyprus and Portugal. Estonia is an exception with an employment share of 7%. Other Member States with relatively large Blue Economy sectors include Spain, Latvia, Denmark, Bulgaria, and Ireland.

---

<sup>8</sup> Comissão Europeia, Direção-Geral dos Assuntos Marítimos e das Pescas, Addamo, A., Calvo Santos, A., Carvalho, N., *et al.*, *The EU Blue Economy Report 2021: Annexes*, Publications Office, 2021, available at <https://data.europa.eu/doi/10.2771/8217>

## Portuguese Blue Economy

Data related to Portuguese Blue Economy<sup>9</sup> demonstrates this reality:

- Blue Economy GVA has grown nearly twice as much as the national GVA; and more than doubled the employment growth
- It represents 3,9% of the county's GVA and 4% of employment

While society seems not to have this perception – and even most political and social organisations – blue economy GVA is now higher than sectors as agriculture (2,4%), energy (3,6%), and only slightly under construction (4,1%).

The most relevant Blue Economy sector in Portugal is coastal tourism, including nautical sports and culture, followed by the living resources sector (fisheries, aquaculture, and fish transformation and commercialization) – both in GVA and employment.

It is noteworthy to verify that average salaries in blue economy are higher than the national average in almost all groupings of the national blue economy satellite account – only tourism and living resources register average salaries lower than it, derived from the weight that low-skilled jobs have in these sectors.

## Final Remarks

So, briefly, Blue Economy in the North Atlantic has proven resilient to the 2008 economic crisis and, in most sectors, to the 2020 pandemic crisis, and employs skilled workers, especially in emerging areas where the average wage is high, but also in established sectors. It is still, though, at an early phase of development for several sectors, and it is foreseen that it will develop further in the next decades.

It would probably benefit from more synergies between blue ecosystems in both margins of the North Atlantic, namely in emerging technology-driven sectors but it is surely a promising investment area in the coming years.

---

<sup>9</sup> See: Instituto Nacional de Estatística (INE), Statistics Portugal and Regional Directorate of Statistics of Madeira (DREM). Ocean Satellite Account 2016-2018. Destaque Informação Estatística/Press Release. Available at: *Direção-Geral de Política do Mar* [online], Contas Satélite do Mar, <https://www.dgpm.mm.gov.pt/conta-satelite-do-mar>

## Systemic Competition and Cooperation in the South Atlantic

**Mónica Herz**

*Pontifical Catholic University of Rio de Janeiro (PUC Rio)*

This presentation is built upon the work developed with Admiral António Ruy de Almeida Silva and Professor Danilo Marcondes. We have written one chapter on the subject and we are working within the context of broader research on Brazilian defence. I would like to bring forward not only a Brazilian view of the issue, but also a Latin American view, even though at this point in time it is difficult to talk of either, since our foreign policy is in a state of profound crisis and regional cooperation at a moment of decay.

We attempt to think in terms of moving towards greater cooperation and a common policy for the South Atlantic, at least in Latin America. The South Atlantic is very important for Brazilian foreign policy and Brazilian defence policy. The Ocean is often referred to as the “Blue Amazon” to call attention to its relevance, as well as the Amazon region.

There are several aspects of the South Atlantic that we could analyse. There are numerous different forms of cooperation, both in terms of illegal activities, peace operations, technical cooperation, and so on. However, it is essential to analyse, both the dynamics of competition and cooperation, in order to ensure that the dynamics of cooperation prevail, which does not always happen, as the case of Ukraine illustrates.

Systemic competition between China, the United States, the western countries of Europe, and Russia is taking place in the South Atlantic. In that regard, it is necessary to prepare governance mechanisms that go beyond bilateral cooperation, to allow this competition to be channeled in a peaceful manner and, whenever possible, to be transformed into cooperative mechanisms.

Latin America is greatly concerned with this matter. In the region there is a very strong feeling towards defining the South Atlantic as an area of peace and free of weapons of mass destruction. At the same time, the 1982 Falklands War left a considerable mark in Latin America, in particular for defence personnel and scholars. The presence of a British base on the Islands is also of significant importance. Moreover, the US’ presence in the region has been enhanced by the activation of the Fourth Fleet and by the presence of the AFRICOM. This has been mostly approached from the point of view of Latin American countries and on a bilateral basis. At the same time, there has been a long running discussion on the presence of NATO countries in the South Atlantic, which is interpreted both as a problem and an opportunity.

Likewise, the growing Chinese presence in the South Atlantic is becoming more evident. It is essential to create adequate forums to discuss what this presence might signify and how to deal with it. China is present in the South Atlantic through military diplomacy, UN peacekeeping missions, the so-called “Peace Ark” naval hospital, which toured the Caribbean for some time. There are bilateral agreements with some countries, in particular, in Latin America there has been a strong approximation with Argentina. The cooperation between China and Argentina has grown with the One Belt, One Road Initiative. This Initiative is very prominent in Latin America, due to its number of infrastructures and projects throughout the continent. In the Brazilian case, China is strongly involved in mineral activity. For instance, a Chinese company, operates Brazil’s second largest container port, in Paranaguá, and a massive port is planned in the North, in São Luís. In Uruguay, Chinese fishing groups are also involved in investment. These actions are interconnected with agreements on free trade and investment in infrastructure throughout the region. Of course, this comes as an enormous advantage for Latin America.

The fact is that the South Atlantic became a theme for Chinese policymakers and the presence of China became a theme for North American policymakers. We need to move towards governance mechanisms and forums where Latin American and African countries can take part in the debate. In the past, we even had a very debated project that did not move forward, of creating a new channel in Nicaragua that would rival the Panama Canal. China has also been more involved in regional and multilateral organisations, as a participant in debates. We believe that, in particular with our African counterparts, it is very important to move towards mechanisms to discuss the future of the South Atlantic in the context of systemic competition, in order to allow the dynamics of cooperation to prevail.

## The United States and the Atlantic

### **Maxine Burkett**

*U. S. Deputy Assistant Secretary of State for Oceans, Fisheries and Polar Affairs in the Department of State's Bureau of Oceans and International Environmental and Scientific Affairs*

The United States has welcomed and supported the Atlantic Centre since its inception. The Centre offers us a welcome and unique opportunity to engage on Atlantic issues with a diverse group of partners in Europe, Africa, and South America.

The Atlantic Centre and discussions like this allow us to enhance our thinking about the Atlantic and explore the range of common interests and principles that Atlantic coastal states share.

The strategic importance of a well-governed, peaceful Atlantic is clear, as is the importance of developing a strong, cooperative community along its shores.

Broadly speaking, we all want the same thing. An Atlantic that is safe, secure, and prosperous for all. An Atlantic that is an area of peace and prosperity, governed by internationally recognized laws and conventions, supportive of sustainable “blue economies,” and resilient to multiple stressors and malign actors.

Since the earliest days of the Biden-Harris Administration we have focused on three strategic priorities related to the ocean:

- Maximizing the environmental, economic and social benefits the ocean provides.
- Developing an ocean-climate action plan to focus on ocean-based solutions to mitigate climate change effects.
- And identifying strategic directions for ocean science and technology.

Those priorities are all interrelated and all clearly linked to a discussion of geopolitics. The first point perhaps most clearly. “Maximizing the environmental, economic, and social benefits provided by the ocean” cannot happen in each nation in isolation.

What each of us does will affect the others who rely on the ocean. And while maps do not always make it obvious, the ocean is a resource that impacts every country, directly or indirectly. Whether along the shores of the Atlantic or elsewhere.

The threats to our shared stability are clear. Challenges to maritime security in the form of piracy, illicit trafficking of people, drugs, and weapons, illegal, unreported, and unregulated (IUU) fishing, and weak maritime governance leaves nations vulnerable to State and non-State actors eager to

exploit the maritime space for their own illicit purposes. These actions upend Atlantic nations' efforts to harness their maritime resources for the good of their citizens and for future generations. There will not be a thriving Blue Economy if instability prevails and malign actors operate without consequences.

Geopolitics is so often framed as a story of competition that we risk forgetting that it is also a story of cooperation. The ocean is already managed through a constellation of national laws, international agreements, and long-standing practices.

We already know we must work together to achieve the best outcomes. We have a track record for the ocean as a venue for cooperation as much as competition. We just need to strengthen that approach.

I will offer you a timely example of cooperation on the right track. The United States protects approximately 26 percent of our waters. That is a significant area devoted to marine protected areas (MPAs) but it is not all that much compared to the entire global ocean. So, we are seeking the most effective mechanisms available now to do more.

We have a once-in-a-lifetime opportunity right now, through the negotiations on an internationally binding legal instrument on the conservation and sustainable use of marine biological diversity of areas beyond national jurisdiction, or BBNJ, to create – for the first time – a coordinated and cross-sectoral approach to establishing high seas marine protected areas. This will be instrumental to help us achieve our goal of conserving or protecting 30 percent of the global ocean by 2030.

Cooperation must be based on a broad concept of security that uses a whole of society approach and not only enlists governmental agencies but also regional organizations, civil society, industry, and academic institutions.

Traditional maritime security – navies, coast guards, and effective, lawful control of territorial waters and exclusive economic zones or EEZs – will always have a critical role and the United States will remain an active partner in those efforts to those who share our aspirations for a peaceful and well-governed Atlantic consistent with international law.

From Africa Partnership Station to OBANGAME EXPRESS we have robust cooperation with partners in Africa. Our North Atlantic cooperation via NATO is part of the bedrock of regional and global maritime security. Our ties to navies and coast guards in Latin America and the Caribbean are long-standing. We are an active partner. In the last 14 years we have partnered with most countries on the Atlantic Coast of Africa to install the tools and tech needed to enhance each nation's maritime domain awareness.

The United States already is doing a lot, but we have so many common and shared interests, and we want to do more. Beyond traditional maritime security, the United States is looking increasingly

for an expanded roster of partners to share knowledge and ideas in support of blue economies, protecting coastlines from pollution, and addressing the global effects of climate change.

This increasingly holistic approach to cooperation will guide us and underscores our desire for partners on all four continents that border the Atlantic.

Healthy, well-managed, and safe ocean waters provide jobs, food, transportation, energy, recreation, and national security.

That is the bottom line. Those are the things we get if we work together to make sure geopolitics in the Atlantic, in the early 21<sup>st</sup> century and beyond, is a story of cooperation and not dominated by competition that ignores the well-being of the hundreds of millions who live near or depend on the Atlantic.

Stakeholders of all types have a critical role, but governments will continue to be the architects of agreements that affect the future of the ocean and the modelers of behavior that will shape the future – for better or for worse.

Governments are stewards of the ocean with outsized influence. And where they work together, that influence is magnified.

Through a collective commitment to shared principles and cooperation we can seek security and economic prosperity that lasts into the future.

Those shared principles deserve discussion throughout the region. I'll leave you with several principles that I think can serve as the basis for geopolitical cooperation:

- Commitment to an open world where countries are free from foreign interference, coercion, and domination.
- Commitment to freedom of navigation, overflight, and other lawful uses of the sea.
- Commitment to protect biodiversity.
- Commitment to limit emissions in line with the Paris Agreement.

**II Panel:**

**The Azores and Atlantic Security**

## Science Diplomacy and the Atlantic

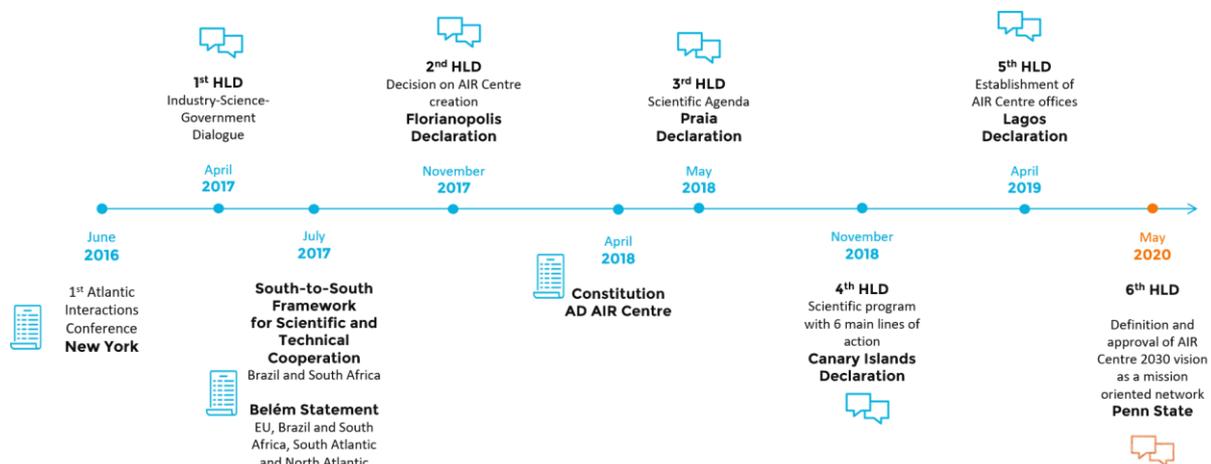
**Miguel Belló Mora**

*CEO Atlantic International Research Centre (AIR Centre)*

### Introduction: the AIR Centre as Science Diplomacy Effort

The Atlantic International Research Centre (AIR Centre) is an international non-profit organization for the development of scientific and technological applications in the Atlantic region with the objective of promoting the creation of highly qualified jobs, paying special attention to the study of ocean-space interactions and the development of sustainability solutions using Earth Observation from the space. A more detailed description can be found at the webpage: [www.aircentre.org](http://www.aircentre.org).

The AIR Centre is the result of a **science diplomacy effort** started by Portugal in New York in June 2016, where a set of countries around the Atlantic met to design a mechanism for scientific and technical cooperation. A set of meetings and High-Level Dialogues in different Atlantic countries (South Africa, Brazil, Cape Vert, Spain, Nigeria, ...) led to the creation of the AIR Centre in 2018.



Today, the AIR Centre, headquartered on Terceira Island – Azores, is an institution established as a distributed network which already includes several countries in the Americas (Brazil, Colombia, Mexico, United States). Europe (Portugal, Spain, United Kingdom, Norway), and Africa (South Africa, Nigeria, Angola, Namibia, Cape Verde, São Tomé and Príncipe). The AIR Centre's mission includes activities in areas of enormous scientific, economic and social impact, such as coastal

erosion, protection of bays and estuaries, marine energies or mitigation of natural disasters. A description of some representative projects can be found at: <https://www.aircentre.org/projects/>.



## **AIR Centre Missions and Priorities**

The AIR Centre main actions are oriented towards five selected thematic missions:

- Clean and productive bays and estuaries
- Resilience to coastal natural hazards
- Sustainable food production
- Improved management of marine and coastal resources
- Improved environmental and maritime monitoring

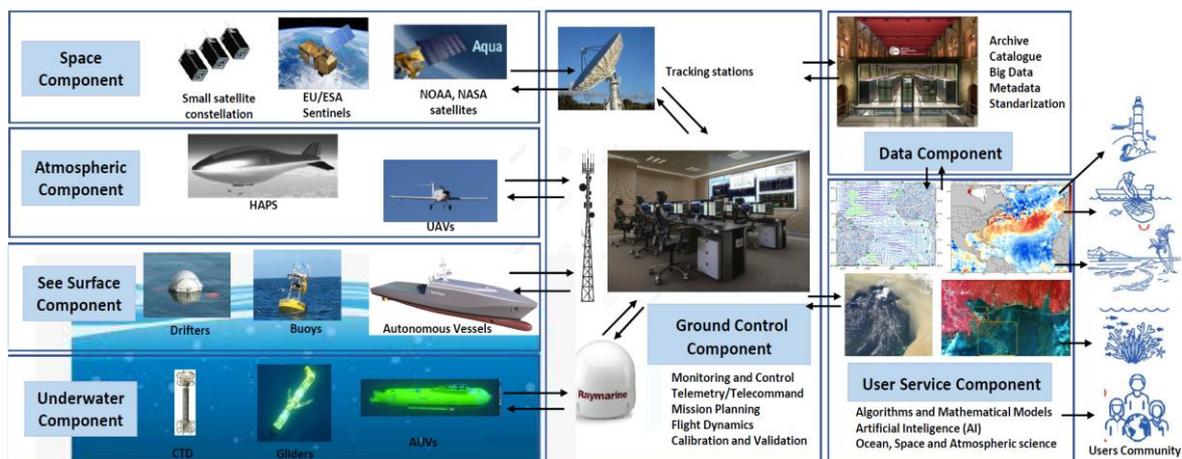
In line with the above missions, the AIR Centre has organized in July 2021 a Workshop for the identification of user needs and priorities within the network of member countries with the participation of about 300 stakeholders from all around the Atlantic Ocean. The selected needs and priorities are the following:

- Coastal erosion, bay and estuarine area protection
- Fish stock management and protection of fisheries
- Optimization of aquaculture and algae bloom monitoring
- Detection of oil spills, plastics and ocean contamination
- Climate change monitoring and marine weather forecast

- See ice monitoring and marine operations safety
- Ocean ship monitoring and air traffic service (AIS and ADSB)
- Disaster monitoring:
  - Floods risk and evolution
  - Tsunami alert
  - Fire risk and recovery
  - Earthquakes and volcanoes
- Biodiversity assessment and animal migrations
- Water quality, resources and management
- Ports safety and energy, oil and gas services

### The AIR Centre Ocean Observation System

In order to develop scientific and technological applications to address the above list of priorities, it is of paramount importance the setup of a holistic Ocean Observation System at the AIR Centre, such a system is called **APPOSS** (Atlantic Pole to Pole Observation System of Systems). The following figure shows the architecture of APPOSS:



It is pole to pole because there are no frontiers on the ocean, events on the Arctic may have influence on the Antarctic Ocean. System of systems as it is impossible to observe the ocean with a single system, for this reason APPOSS has 4 main components:

- Space components with data coming for different type of satellites
- Atmospheric components with the use of High-Altitude Platforms (HAPS) and drones

- Water Surface components with the use of scientific vessels, buoys, automatic vessels
- Underwater component for the acquisition of water column data with gliders and CTDs

For the water surface and underwater component, the AIR Centre shall be based in a new project at Azores island called “**Atlantic Observatory**” in a partnership with Norway, with radar and gliders to observe surface and water column.

The use of satellites in the Space Component is absolutely fundamental, because it is an observation system that provides synoptic measurements of the ocean due to its very long field of view. Part of the APPOSS Space Component is made up of existing satellites in Europe, the **Copernicus program** with the **Sentinel Satellites** are extensively used for ocean observation at AIR Centre.

In addition, a Direct Reception Station has been installed at the AIR Centre Headquarter in the Terceira Island, Azores, able to receive direct broadcast data from **NOAA** and **NASA** satellites, the Chinese satellites from the **Fenyung** series can also be received.



Above satellites are very valuable, **but there is an important gap, as they do not provide very high-resolution data.** The AIR Centre is one of the shareholders of the Earth Observation satellite operator **GEOSAT**, which operates the satellites GEOSAT 1 and GEOSAT 2 providing unique very frequent and very high resolution (down to 75 cm spatial resolution) images of the planet to help developing scientific projects and technological applications towards sustainability

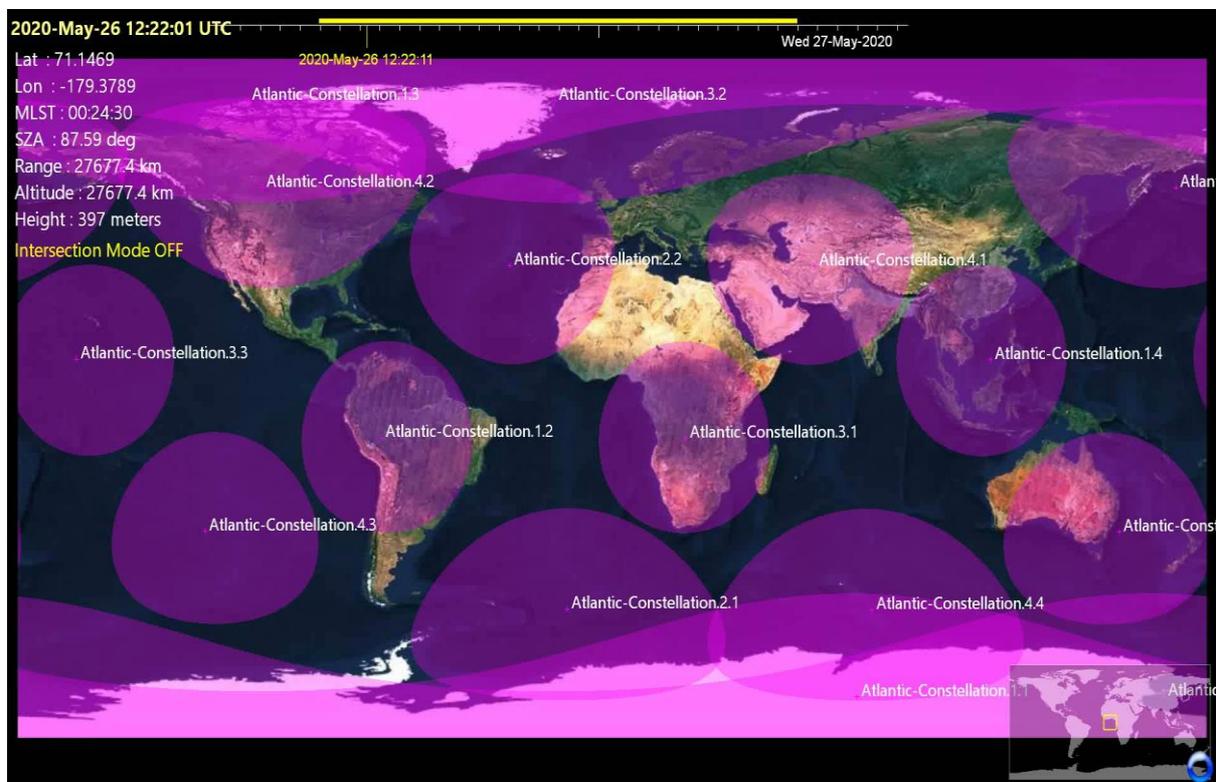
and help solving the global challenges that we are facing. AIR Centre is using data from GEOSAT 1 and GEOSAT 2 satellites to cover this gap of ocean observation with very high resolution. An example of image in very high resolution is the following image of the La Palma Island volcano eruption and the arrival of the lava to the ocean.



### **Future Observation System: The Atlantic Constellation**

There is another **important gap in ocean observation from the space, it is the observation with high time resolution**. Above presented satellites are very large and sophisticated, which provide measurements with a low frequency (normally days) and there is an urgent need to obtain space with a higher frequency (every 2-3 hours) and lower latency (less 1 hour) for applications such as monitoring of natural disasters and extreme weather events, fishery protection, search and rescue operations or detailed modelling of ocean phenomena, among others. The only way to provide space data with high frequency is with a constellation of satellites. Today, the miniaturization of components made possible the development of small satellites (micro or nano-satellites) with high performance, being based on "**New Space**", new trend of the space industry in recent years, based on applications of small systems.

Therefore, the AIR Centre intends to develop a “flagship” project for the development of a constellation of small satellites designated **Atlantic Constellation**, intending to unify its partners of the Atlantic network with a vision of transatlantic partnership for a constellation that will provide important measurements with a frequency without precedents, that allows to develop innovative applications from the space for the ocean, land, climate and atmosphere. The objective of the Atlantic Constellation is to cover the existing gap today of very frequent ocean data, it is composed of 16 satellites with multispectral, hyperspectral, GNSS-R, AIDS and IoT sensors. This system is able to provide data of the ocean with a frequency of 2-3 hours. The following images present the 2D and 3D geometry of the AIR Centre planned constellation.



## Conclusions

The AIR Centre has been consolidated as an important international network for technical and scientific partnership along the Atlantic region.

AIR Centre infrastructures like Earth Observation Laboratory, the satellite Direct Receiving Station (DRS), the Marine Biodiversity Observation Network Secretariat, GEOBON and RAEGE (in collaboration with the Azores Regional Government) have been implemented.

The first set of proposals were released to competitive calls, leading to 20 different projects in international collaboration for the use of Earth Observation from space for the development of applications for the welfare of citizens.

The long-term vision infrastructure “**Atlantic Pole to Pole Observation System of Systems**” (**APPOSS**) is defined with the **Atlantic Constellation** of small satellites as a flagship project, in collaboration between different countries along the region.

AIR Centre is also playing a very active link with international organizations, as an observer at the United Nations, node of the UN Environment Program UNEP and member of the Scientific Committee for Oceanic Research (SCOR).

# **Maritime Security in the Atlantic: The Vulnerabilities of Subsea Data Infrastructure**

**Christian Bueger**

*University of Copenhagen*

**Tobias Liebetrau**

*Science Po (Paris Institute of Political Studies)*

## **Introduction**

The Atlantic is predominantly a maritime region. This makes maritime security a priority in the region. Maritime security has in the past two decades received growing attention, not the least reflected in dedicated maritime security strategies, naval operations and global capacity-building investments<sup>10</sup>. Maritime security continues to be primarily associated with piracy and maritime terrorism. In the Atlantic region it is predominantly piracy incidents in the Gulf of Guinea that has sparked substantial attention and responses. Yet, it is also substantial work to counter terrorism through the implementation of port security measures and the prevention of smuggling activities that features high on the agenda<sup>11</sup>.

This contribution aims at increasing awareness for the importance of infrastructure in the maritime security agenda. Since the first holistic outlines of maritime security have emerged, the resilience of critical maritime infrastructures has frequently been mentioned as a concern, but not led to substantial awareness or responses. The European Union Maritime Security Strategy of 2014, for instance, stresses the importance of increasing the resilience of critical maritime infrastructures<sup>12</sup>. Yet, the action plans linked to the strategy and the reports of their implementation do not indicate any substantial activities<sup>13</sup>.

There are different types of critical maritime infrastructures. The first type are ports. It is the only maritime infrastructure that has so far gained substantial attention, and here it is particularly cyber security threats that are considered important. Other infrastructures are in the field of energy production and flows. This includes oil and gas platforms, offshore wind farms, as well as subsea

---

<sup>10</sup> Christian Bueger, Timothy Edmunds and Barry J. Ryan, Maritime security: the uncharted politics of the global sea, *International Affairs*, 95(5), September 2019, pp. 971-978.

<sup>11</sup> See, e.g., Pedro Seabra and Rita Costa, Mapping EU maritime capacity-building in the Atlantic, *Atlantic Centre Report* n.1, December 2021, Atlantic Centre, available at [https://www.defesa.gov.pt/pt/pdefesa/ac/pub/Documents/Atlantic-Centre\\_Report\\_01.pdf](https://www.defesa.gov.pt/pt/pdefesa/ac/pub/Documents/Atlantic-Centre_Report_01.pdf)

<sup>12</sup> Council of the European Union. European Union Maritime Security Strategy, 11205/14, 24 June 2014.

<sup>13</sup> Council of the European Union. *Council conclusions on the revision of the European Union Maritime Security Strategy (EUMSS) Action Plan (26 June 2018)*, 10494/18, Brussels, 26 June 2018. European Commission. Joint Staff Working Document.

pipelines. As the controversy over the Nord Stream 2 pipeline in the Baltic Sea, as well as platform disasters, such as the Deep Water Horizon catastrophe in the Gulf of Mexico, highlight such infrastructures raise security concerns and imply political debates, but often do so only under exceptional circumstances. A third type of infrastructure, whose importance often goes fully unnoticed is the global undersea cable network<sup>14</sup>. The network goes back to a long history in the Atlantic, given that the first inter-state cable was laid in the region in 1857. These telegraphic cables have since been replaced with a new generation of communication infrastructure: the optic fiber cables that transport the data of the digital age.

It is this third type of infrastructure that we shall discuss in the following. We start with a brief exploration of why and how the cables matter in the Atlantic region. This also provides us with an opportunity to introduce the key components of this infrastructure. We then proceed in discussing the major challenges linked to ensuring resilience of the data cable network and why it should be considered as a key part of the maritime security agenda. In the next section we discuss current measures and responses on a national and regional level. This demonstrates that there is a growing awareness for the vulnerabilities of the network, yet responses are so far on the strategic level with a lack of concrete programs and activities. Multi-dimensionality poses a major challenge since the issue cannot be clearly categorized as either a civil or a military, a maritime or a cyber problem in this regard. We end in discussing a range of proposals of how the cable network can be better protected in the Atlantic region.

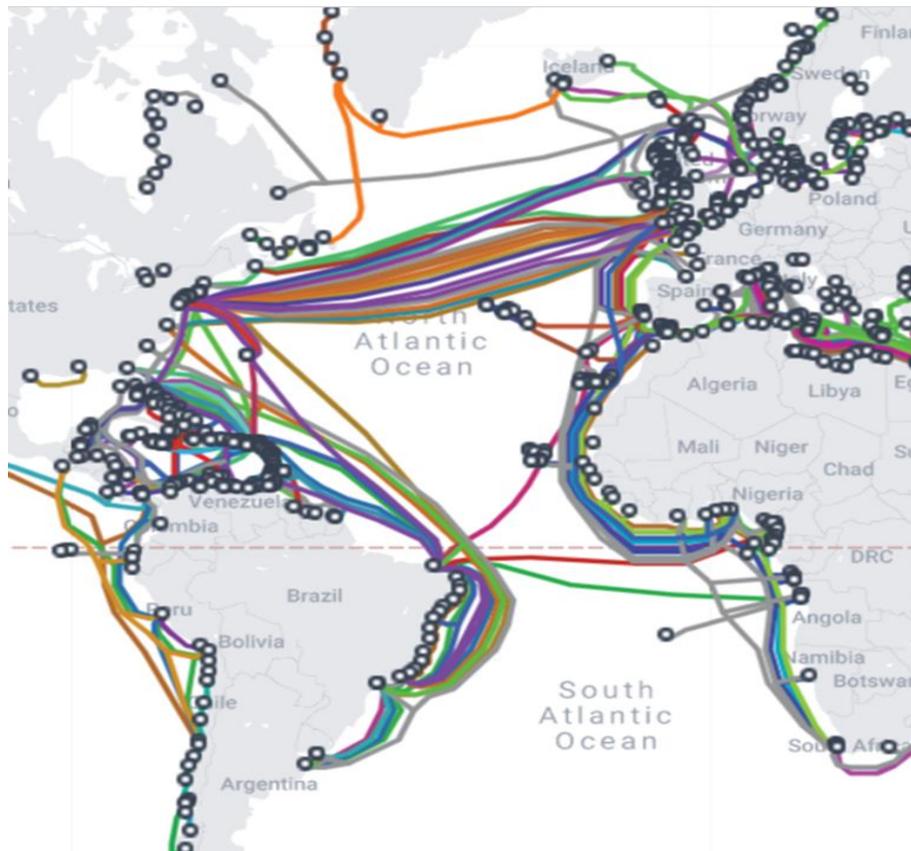
### **Subsea Data Cables and the Atlantic**

95% of data travels through the global optic fiber cable. While satellite-based connectivity continues to be advanced, physical cables are faster, more reliable, and not dependent on weather. The main connectivity routes in the Atlantic include the transatlantic routes from North America to Europe, with the UK being a main connector for Europe. Increasingly, cables land on the Danish west coast. In the South Atlantic the main connections are those between West Africa and Portugal and France providing one of the key routes of connectivity between Africa and Europe. Across the South Atlantic a growing number of cables connects South America, in particular Brazil with Europe.

---

<sup>14</sup> As reviewed in Bueger, Christian and Tobias Liebetrau, 2021. Governing hidden infrastructure: The security politics of the global submarine data cable network, *Contemporary Security Policy*, 42(3), pp. 391-413.

**Graph 1:**  
**Atlantic cable connections**



Source: TeleGeography, Submarine Cable Map, available at <https://www.submarinecablemap.com/>

The cable network is composed of several critical components. This is first the fiber optic cable itself. Legally it makes a major difference if a cable lies within the 12 nautical miles of territorial water in which states have full jurisdiction under the UN Convention on the Law of the Sea, or in the high seas, where rights and responsibilities are more ambiguous. The second key component are the landing sites where the sea cable connects to its counterpart on land. Often such landing stations are embedded in other infrastructure, in particular electricity nodes.

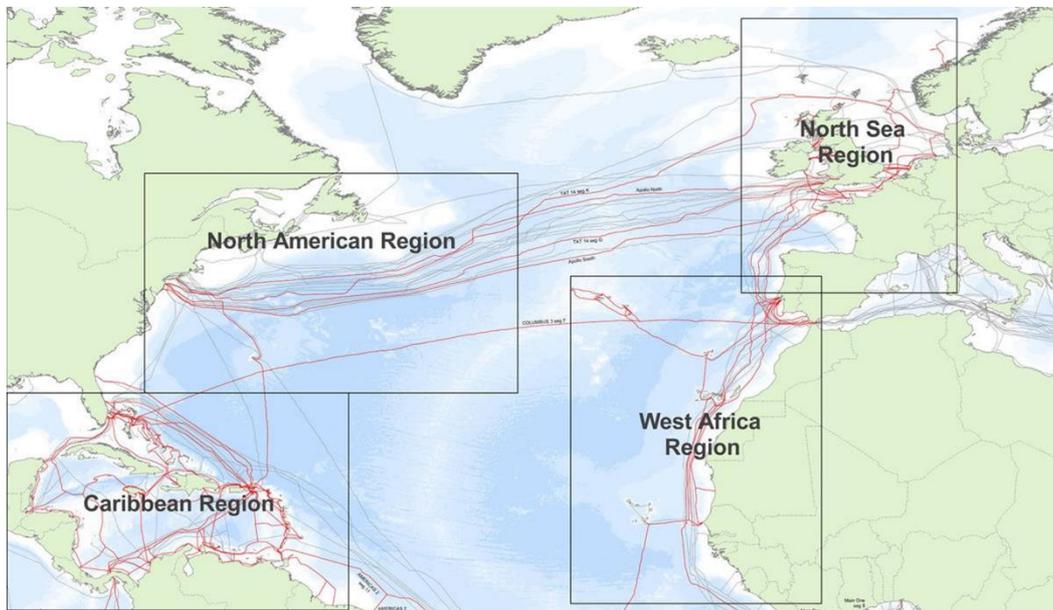
The last key component is the repair and maintenance infrastructure that is triggered if a cable malfunctions or is damaged. To provide for repair and maintenance cable owners and operators have entered joined regional agreements. Through these agreements repair ships are held on standby and depots are maintained. The relevant agreement for the Atlantic is the Atlantic Cable Maintenance & Repair Agreement known as ACMA<sup>15</sup>. It covers the Atlantic with particular focus on the North Sea and the Southern Europe-Western Africa area (see graph 2). ACMA has three

---

<sup>15</sup> The Atlantic Cable Maintenance Agreement (ACMA) [website] <https://www.acma2017.com/>

repair ships on standby, with two operated out of Europe, one in Portland, UK and one in Brest, France, as well as one ship based in Curacao, Netherlands Antilles.

**Graph 2:**  
**ACMA repair areas**



Source: ACMA Area Maps, available at <https://www.acma2017.com/about/maps/>

Given the substantial number of cables crossing the North-Atlantic the connectivity is very reliable, as in the case of a cable fault data traffic can easily be rerouted. This is true even in the light of growing data volumes, given that the number of cable structures continues to be expanded. The same cannot necessarily be said for the South-Atlantic connectivity, both in terms of the triangle between Europe, South America and Africa, but also in terms of intra-African and intra-South American connectivity. Here redundancy is lower and the impact of damages potentially higher. Islands are particularly vulnerable in this regard. This includes the Azores and Canary Islands, Faroe Islands, Channel Islands, and the Gulf of Guinea Islands

## **Challenges**

The criticality of the cable infrastructure makes its resilience a key security concern. With cables transgressing national and international territories they are both a concern within internal as well as external security implying that different jurisdictions and hence often various agencies are involved. While cables lay out at sea and hence need to be seen as part of maritime security, they are equally relevant for the cyber security and critical infrastructure agendas. What are the

challenges of subsea data cable protection that need attention? Three types of damages to the cable network need consideration<sup>16</sup>.

Firstly, natural disasters are a key risk for the cable network. While disasters occur less often, they can have tremendous consequences and can damage several cable connections at once. The recent cable breakage in the Pacific Island of Tonga illustrates such consequences and that islands with volcanic activity in their vicinity are vulnerable.

Secondly, most damages of the cable network are caused by everyday marine activities, in particular fishing, anchoring, and dredging. Cable damages are most often the outcome of accidents. Yet, they are also often the result of negligence and hazardous and risky activities in cable zones.

The third form of damage related to intentional and deliberate attacks that target the cable for political or economic gains. Grey zone or hybrid warfare activities linked to countries such as Russia and China have led to substantial awareness of such a threat from states. Russian naval activities in the vicinity of cable location have increased. To provide but one example, in February 2022, the Russian navy, planned a naval exercise in the Irish Exclusive Economic Zones in vicinity of strategic cable locations<sup>17</sup>. Potentially such a threat may also emerge from China, given its fishing fleet operates in the Atlantic and has been accused in the past to deliberately damage cable infrastructures for political reasons<sup>18</sup>. There is also the possibility that terrorist groups attack cables, since they have targeted infrastructure in the past. For transnational organized crime groups, the data cable network might be a target as part of ransom seeking or a cover up operation.

Attacks on cable infrastructure do not necessarily require high end subsea capabilities. They could be carried out using civil maritime vessels employing improvised cutting devices, naval mines or maritime improvised explosive devices, which are readily available and cheap to produce.

## Responses

Attention for the vulnerabilities of the cable network and in particular the hybrid threat has steadily increased. Yet, the responses on a national and regional have been less elaborate. Indeed, many countries in the Atlantic seem not to deliberately acknowledge the threat or challenges linked to it.

---

<sup>16</sup> Bueger, Christian and Tobias Liebetrau. 2021. Governing hidden infrastructure: The security politics of the global submarine data cable network, *Contemporary Security Policy*, 42(3), pp. 391-413.

<sup>17</sup> Gallagher, Conor and Simon Carswell. Russian naval drill to still take place over vital cables, experts believe. *The Irish Times*, [updated] 07:44, Mon, Jan 31, 2022, available at <https://www.irishtimes.com/news/environment/russian-naval-drill-to-still-take-place-over-vital-cables-experts-believe-1.4789421>

<sup>18</sup> See, Yimou Lee. China's latest weapon against Taiwan: the sand dredger, *Reuters*, 12:23 PM, February 5, 2021, available at <https://www.reuters.com/article/us-taiwan-china-security-idUSKBN2A51EJ>

Cable resilience requires a coordinated and complex governance response, since the cable infrastructure concerns various aspects of national governance systems. This reaches from maritime security, navies, coastguard and maritime surveillance to cyber, infrastructure, telecommunication domains. While countries in the Atlantic, such as Denmark leave cable resilience in the hand of the industry, other states are more concerned and address the issue through a military response. The UK identifies cable resilience as a top security and defense priority and commissioned in 2021 a dedicated naval vessel<sup>19</sup>. In France, cable protection is a key issue in its security strategies. In 2022, France published a dedicated subsea security strategy complementing its maritime security strategy<sup>20</sup>.

On a regional level it is particularly NATO that started to address cable resilience. In 2020 it reopened the Atlantic Command with the explicit goal of contributing to subsea security, and leadership has frequently emphasized the issue. The European Union has not yet developed a dedicated response strategy, yet its Maritime Security Strategy of 2014<sup>21</sup> and the 2020 Security Union Strategy<sup>22</sup> stress the importance of protecting critical maritime infrastructure. In addition, the Portuguese presidency of the European Council of 2021 flagged the issue as priority<sup>23</sup>, which indicates that there is EU awareness, and that responses are underway. On an international level it is in particular the UN Office on Drugs and Crime's Global Maritime Crime Programme that has included cable resilience in its programming with an emphasis on capacity building in small states, in particular in the Indian Ocean and Pacific region.

However, cable resilience and protection continue to be an underappreciated domain within the maritime security agenda. While attention is on the rise, dedicated activities and coordination attempts remain sparse. What are the measures that would improve the resilience of cable infrastructures?

---

<sup>19</sup> Jonathan Beale. New Royal Navy ship to protect 'critical' undersea cables. *BBC* [online], 21 March 2021, available at <https://www.bbc.com/news/uk-56472655>

<sup>20</sup> Ministère des Armées, 2022. Available at [https://www.defense.gouv.fr/content/download/636001/10511909/file/20220214\\_FRENCH%20SEABED%20STRATEGY.pdf](https://www.defense.gouv.fr/content/download/636001/10511909/file/20220214_FRENCH%20SEABED%20STRATEGY.pdf)

<sup>21</sup> Council of the European Union. European Union Maritime Security Strategy, 11205/14, Brussels, 24 June 2014.

<sup>22</sup> European Commission. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions *on the EU Security Union Strategy*. COM(2020) 605 final, Brussels, 24.7.2020, available at <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0605&from=EN>

<sup>23</sup> Ministerial Declaration. European Data Gateways as a key element of the EU's Digital Decade. Digital Day 2021, March 19<sup>th</sup>, available at <https://www.portugal.gov.pt/download-ficheiros/ficheiro.aspx?v=%3D%3DBQAAAB%2BLCAAAAAAABAAzNDQxMwUA9eE57gUAAAA%3D>

## Proposals

Analysts have pointed to several layers of how cable resilience could be improved<sup>24</sup>. The first layer concerns information sharing between connected countries, either on a bilateral or regional level. None of such mechanisms exist in the Atlantic, and information sharing should capture different levels: the exchange of data on cable breakage and related incidents, data on suspicious maritime activities and vessels, as well as more broadly on national governance structures and legislations and on national best practice. This would contribute to high awareness for the issue, insights on the scale of the problems as well as would strengthen mutual understandings and rapid responses. The second layer is surveillance in both territorial waters as well as the high seas. Improved surveillance ensures the identification of suspicious behavior but also rapid responses. While existing surveillance systems, such as the EU's marine monitoring systems managed by the European Maritime Safety Agency, can be used to better understand marine surface activities in cable locations, the observation of subsea activities is more intricate and calls for new subsea monitoring technologies, such as unmanned underwater drones or remote sensing technology.

A third layer concerns the planning and laying of new cables. Cable routes must be better integrated in marine spatial planning and the design of marine protected areas. Cable corridors situated within marine protected areas are a valuable tool and can assist in protecting infrastructures as well as marine biodiversity.

The fourth layer concerns capacity building and assistance for countries, such as small island states and weakly developed states which are particularly vulnerable in developing better responses. Cable protection can well be integrated in existing maritime security and marine biodiversity capacity building programmes.

The last layer concerns the repair infrastructure. As indicated, in the Atlantic, as elsewhere, repair capacities are limited. This entails the risk that cable damage takes long to repair and outages might be the consequence. More investments in repair infrastructure, for instance, through private-public partnership are a key answer here.

## Conclusion

The subsea dimension and marine infrastructures continue to be blind spots in the maritime security agenda. Given the importance of subsea data cables, but also increasingly of subsea

---

<sup>24</sup> See Bueger, Christian and Tobias Liebetrau. 2021. Governing hidden infrastructure: The security politics of the global submarine data cable network, *Contemporary Security Policy*, 42(3), pp. 391-413; and, European Parliament. 2022. Security threats to undersea communications cables and infrastructure – consequences for the EU, Brussels.

electricity cables, for the digital economy and energy markets, it is time to re-evaluate maritime infrastructure resilience. While in light of growing redundancy the threat from deliberate attacks should not be exaggerated, it is time for recognizing the dependency at stake and developing appropriate protection regimes on national, bilateral and regional levels. Given the shared interest in using this infrastructure, cable resilience is not only a challenge but also an opportunity for technical cooperation in the Atlantic.

## The Azores and Transatlantic Relations

**Luís Andrade**

*University of the Azores*

The main goal of this presentation is to briefly analyse the role played by the archipelago of the Azores in what concerns Transatlantic Relations with the main focus at the present time.

Portuguese Foreign Policy has always been characterized by being euro-Atlantic. In other words, the Atlantic Ocean has always played a very important role in what concerns Portugal's foreign policy. Within this context, let me give you two examples: the Anglo-Portuguese Alliance at the end of the 14<sup>th</sup> century, and with the United States of America after the end of World War II, even though the US had a naval base in Ponta Delgada during World War I (1917) and in 1944 in the Island of Santa Maria.

On the other hand, Portugal was a founding member of the North Atlantic Treaty Organization (NATO) in 1949, regardless of not being a democratic country at the time, a *sine qua non* condition for any country to become a NATO member. The main reason that explains this was, in fact, the geostrategic importance of the archipelago of the Azores for the U.S. and NATO as we can read in the diplomatic documents published by the Foreign Relations of the United States.

The need by the U.S. administration to have access to the Azores during the Cold War was very clear from the beginning. Within this context, we can give two examples: the Berlin Blockade (1948-1949) and the Yom Kippur war in 1973.

Between 1945 and the end of the Cold War, in November of 1989, the Azores was, indeed, essential for the projection of power from the United States of America to other theatres of operations, mainly the Middle East.

After the end of the Cold War, mainly during the last ten to fifteen years, there was, in fact, a significant reduction in the number of the U.S. military personnel at Lajes Air Base due to both geopolitical and financial reasons.

As we all know, as far as geopolitics are concerned, the existence of a vacuum of power is extremely dangerous because, sooner or later, someone will occupy it. And this is why the United States will not abandon Lajes air base, at least in the near future. Another very relevant reason that explains this is clearly related to the unpredictability of International Relations and a clear example is the present crisis in Ukraine.

In what concerns the Azores, the recent creation of the AIR Centre, as well as the Atlantic Centre, constitute two very important examples related to the importance of these islands as far as their potentialities are concerned.

One other aspect to take into consideration is related to the relevance of the articulation between the North and the South Atlantic. Within this context, we cannot forget that the Portuguese language is spoken in both sides of the South Atlantic which is, in fact, an important aspect to take into consideration.

On the other hand, even though the USSR was dismantled in 1991, the Atlantic Alliance is still very relevant due to different reasons, such as: transnational terrorism; proliferation of weapons of mass destruction; the environment; the pandemic threat; cybersecurity; etc. A good example is what is happening right now with the Russian invasion of Ukraine that reiterates the need for the continuation of NATO.

In what concerns Portugal, the relationship with the United States has been, overall, very satisfying for both parties.

For the U.S., the role played by the Azores was well defined in 1994. It was considered then, to be a key base in what concerns force projection from the U.S. to the Middle East. In the document elaborated by the General Accounting Office entitled *Strategic Mobility: Serious Problems Remain in U.S. Deployment Capabilities* in April of 1994, from the sixteen bases considered essential for the U.S. worldwide, six were in Europe and one of them was Lajes Air Base in the Azores.

Regardless of the misunderstandings and different views that may exist between the U.S. and Europe, the transatlantic dialogue is essential to both sides of the Atlantic. The present war in Ukraine demonstrated that the thirty NATO members are more united than ever.

Even though the Indo-Pacific region is very relevant for the U.S., we cannot forget the importance of the North Atlantic as well as the South Atlantic for the reasons that have been mentioned before.

Regardless of the geopolitical and geostrategic aspects related to the archipelago of the Azores, we also would like to mention the potentialities of this region in what pertains to research in many different areas related to the ocean, the atmosphere, and climate change, just to give a few examples.

One other aspect is related to the search and rescue operations in the North Atlantic, which, for obvious reasons, do happen quite often.

As previously referred, even though the Pacific Ocean has been playing an increasingly important role during the last few decades, it is our belief that the Atlantic continues to be very relevant.

Within all this context, we have to bear in mind the existence of very strong ties between the two sides of the Atlantic that constitute the basis of the transatlantic relationship, which are based on democracy, freedom, solidarity, subsidiarity and the rule of law.

One other aspect that we would like to mention is related to the need of the European Union to implement a credible Common Foreign and Security Policy and, consequently, a Common Defence Policy. French President, Emmanuel Macron, mentioned this aspect last month at the beginning of the French Presidency of the European Union. If this is implemented with success, it is our understanding that this Common Foreign and Security Policy and its European Common Defence Policy should be complementary to NATO and not the contrary.

What is relevant is that the archipelago of the Azores continues to play a very important role as far as transatlantic relations are concerned.

## Space for the Atlantic

**Carolina Rêgo Costa**

*Portugal Space*

### Space as the New Area for Global Services

Nowadays there is already a mainstream assumption that space technology is critical for Earth. The incorporation of space science and space technology have become intrinsic to our daily lives through utilities that are now common. Space tools are also highly relevant for the attainment of the development agendas' goals either directly, as enablers and drivers, or indirectly, by providing essential data to monitor the progress achieved.

Space is the new place where services are provided. Where global services come from.

### Paradigm Shift

There have been clear shifts in the traditional space geopolitics. China and India have an increasing importance in the launch of satellites, regardless that these are public driven, private driven, national or from other countries. Both have ambitious programs for the production and launch of space objects.

China will have its own Space Station, just between 340 and 450km above the Earth's surface<sup>25</sup>. The **International Space Station** is coming to its natural end by 2030. Countries are becoming more and more involved in the space race: in 2019 the African Union approved a small but well delivered "**African Space Strategy**" recalling it represents "20% of the Earth's land surface area, more than the USA, India, China and Europe put together" and aiming to provide "a strategic framework for developing and operationalizing continental-level space initiatives." And it is noteworthy that many African countries are filing for mass allocation of orbital positions<sup>26</sup>.

A good example of these quick shifts in space policy are the **Artemis Accords**. Notwithstanding the fact that all participants are members of the Committee on the Peaceful Uses of Outer Space (COPUOS), they have not followed the traditional model to reach international agreements on

---

<sup>25</sup> The first module was launched last year, and two modules are to be launched and assembled still this year. The telescope is programmed to be incorporated next year. It is expected to host over 10000 experiments.

<sup>26</sup> For instance, last September Ruanda submitted to the International Telecommunications Union (ITU) a filing for 27 orbital shells comprising 327,320 satellites.

space topics. This is a good example of a freely aligned international cooperation, centered in building blocks of common interests, leveraged in specific activities.

One may ask what are the next activities that are to be competitive, the ones that can become game-changers? A good example could be the **In-Orbit Servicing**, a true shift of paradigm since the service provider will be able to perform repairs, add capabilities or refuel and all of this is to be done in Space. This change is likely to promote new designs for spacecrafts, for motors, of mission purposes. For everything, in fact. Construction in space, space added manufacture or 3D print will become frequent. Or even re-fueling, at the right temperature, pressure and rate. This eliminates current limits, such as the ones imposed by launcher dimensions, and allows for longer missions or even for mission shifts. Maybe launch from space will become a possibility.

NASA is already following this path. The European Space Agency (ESA) has launched a call for ideas for In-Orbit Servicing activities to European industries and academia, aiming to put forward a concept (or concepts) already for the 2022 Ministerial Council.

## **The Role of the European Space Agency**

ESA is still the driving force of space knowledge and space technology development in Europe and has recently approved two fundamental action papers: the “**Agenda 2025**”<sup>27</sup> and the **Matosinhos Manifest**<sup>28</sup>. And we must recall that it was ESA that developed the EU programs: **COPERNICUS**, the European Earth Observation (EO) system, that supports environment management, climate change mitigation and ensures safety and civil security across Europe; **GALILEO**, the global satellite navigation and positioning system (GNSS), applicable to numerous sectors such as transport, fisheries, agriculture or search and rescue, with a possible 20cm accuracy, and **EGNOS**, the European Geostationary Navigation Overlay Service, a navigation signal improving the navigation services to aviation, maritime and land-based users, for the European Commission.

---

<sup>27</sup> It sets out the five ESA Priorities for 2025: Strengthen ESA–EU relations; Boost green and digital commercialisation; Develop space for safety and security; Address critical programme challenges; Complete the ESA transformation.

<sup>28</sup> Containing 3 accelerators and 2 inspirators. The accelerators are initiatives destined to speed up the use of space to solve today’s biggest challenges: i) space for a green future; ii) need to develop a rapid and resilient crisis response system; iii) protection of space assets. The inspirators are missions intended to “catapult Europe’s position as a global leader in space technology, innovation, and deep-space scientific exploration to promote commercialisation, a modern, forward-looking European entrepreneurial landscape, multilateral cooperation, education, the development of human capital”. The inspirators are i) space exploration – icy moons and ii) human spaceflight.

## The European Space Programme

Besides Copernicus, Galileo and Egnos, as of this February, the new European Space Program also comprehends two other pillars that envisage the development of European cutting-edge space technology, namely i) the implementation of an **EU constellation** for **secure connectivity**<sup>29</sup> and the definition of common rules governing **Space Traffic Management**<sup>30</sup> - and this is becoming a general priority, also in other international fora of space policies.

The Commission also presented an “**Action Plan on Synergies between civil, defence and space industries**”<sup>31</sup> to further enhance Europe's technological edge and support its industrial base, where these topics are also addressed, a sign of an ever-growing presence of the Defence Sector in space or, better said, of **Defence as one of the pillars of the European Space Policy**. In fact, it is surely not a coincidence that one of the newest Directorates-General of the European Commission (DG DEFIS) combines Defence Industry and Space.

---

<sup>29</sup> Proposal COM(2022) 57 final. In fact, in an ever-growing digital world, space-based secure connectivity is a strategic asset to reinforce Europe's resilience and autonomy: “It enables our economic power, digital leadership and technological sovereignty, competitiveness and societal progress. Secure connectivity has become a public good for European governments and citizens”: Space: EU initiates a satellite-based connectivity system (europa.eu).

Communication resilience and secure connectivity are now also matters of sovereignty and 6 billion euro will be allocated to them, including communication across current dead zones, ensuring cohesion between Member States. “Both governmental user needs and satellite communication solutions are changing rapidly. The EU space-based secure communication system seeks to meet these increased and evolving needs and will also include the latest quantum communication technologies for secure encryption. It will be based on the development of innovative and disruptive technologies, and on the leveraging of the New Space ecosystem.”

<sup>30</sup> Idem: “The exponential increase in the number of satellites in orbit due to new developments in reusable launchers, small satellites and private initiatives in space, the resilience and safety of EU and Member States' space assets are at serious risk. It is critical to protect the long-term viability of space activities by ensuring that space remains a safe, secure and sustainable environment.”

<sup>31</sup> The main goals of the Action Plan are to: “Enhance the complementarity between relevant EU programmes and instruments covering research, development and deployment to increase efficiency of investments and effectiveness of results (the synergies); Promote that EU funding for research and development, including on defence and space, has economic and technological dividends for European citizens (the spin-offs) and; Facilitate the use of civil industry research achievements and of civil-driven innovation in European defence cooperation projects (the spin-ins). Create a framework that enhances synergies and cross-fertilisation among all relevant EU programmes and instruments, for example in the field of digital, cloud and processors; Frame in a systematic and consistent way the development of critical technologies with first the identification of critical technologies and future capability requirements and then the development of technology roadmaps. Finally, the launch of flagship projects aims to reduce dependencies, foster standardisation and interoperability, stimulate cross-border cooperation, create new value chains and answer to societal and EU strategic needs; Support, throughout the Union, innovation from start-ups, Small and Medium Businesses (SME's) and Research and Technology Organisations (RTO's), by facilitating their access to new opportunities, including by setting up an 'innovation incubator' network; Prepare for the launch of three flagship projects with the potential to become game changers: drone technologies, enhancing the competitiveness of EU industry in this critical technology area with a strong defence dimension, a space-based secure connectivity that should provide for a resilient connectivity system and high-speed connectivity for everyone in Europe based on quantum encryption; and space traffic management, required to avoid collision events that may result from the proliferation of satellites and space debris, while ensuring an autonomous access to space.”

## The Atlantic

The Atlantic is of core interest to Europe and one of its external borders. But when looking from Space, Earth is just a place and the Atlantic is just a spot in it. When it comes to space and space policies, the Atlantic will have the strategic importance that Atlantic countries actually attach to it – and institutions such as the Atlantic Center are fundamental in this regard. In the end, it comes down to the development of space capabilities, the support to space-based commercial operations and of opportunities to provide Atlantic-related goods and services from space. Nowadays, strategic locations for space activities, just by virtue of their earthly geographical position, tend not to be so relevant anymore; the importance must come from a policy drive, actual strategies and implementing plans. This said, it is clear that space can be a very powerful instrument for the Atlantic and a strong driver to increase its safety and to foster knowledge, economic and environmental policies based therein.

The **national global positioning for an “Atlantic Space”** comprises several items: i) the development of an **Atlantic constellation**, a flagship project of the PT Space intended to be composed by 16 High Resolution Satellites, focused on the end users’ needs, particularly fire prevention, hydric resources management, land register and monitoring of the erosion of coastal areas; ii) **satellite-based communications** throughout all the Atlantic, a critical gap, and iii) **Atlantic imagery**, fundamental to deliver a wide range of services based on satellite images such as those related to marine pollution, search & rescue, illegal fishing, monitor stocks and biosphere reserve or carbon sequestration.

## The Case of the Azores

In addition to the above, the Azores can be a good possible location for **access to space**. Nevertheless, we can identify the emergence of new technologies benefiting from mobility, such as ocean platforms and/or ships, that can reduce the cost per/kg and, hence, challenge the competitiveness of actual geographical sites for small payloads. We also see the proliferation of launching points in the world today. For instance, only in Europe there are more than 17 initiatives, with Andoya and Esrange beginning their launches already in 2022.

This reflects two main points: i) first and more important, the assurance of Europe’s autonomous access to space, and ii) the existence of a high competition between countries to develop launch sites, although being known that not all of them will be necessary. For those who intend to pursue the goal of becoming an actual launching spot, there is a need of: comprehensive

and competitive regulation, effective public policy mechanisms to attract solid commercial operations, a user-friendly approach and even public support to private commercial initiatives.

The Azores, with their clean and quiet skies – i.e. not being disturbed by high illumination levels and other constraints more common in mainland Europe – are a unique and a strategic spot for **Observation** & for the **Ground Segment**. The Portuguese Space Agency is starting demarches to prepare the current ESA Tracking Station located in Santa Maria for the next generation of tracking services – these can encompass meteo satellite-based data and scientific institutional missions, amongst many others.

A final note to mention that Portugal is part of the **Space Surveillance & Tracking** European consortium (EU SST) that aims to ensure a dedicated capacity for monitoring, characterization and tracking of objects which, moving in near Earth orbits, could pose a real danger to space infrastructures and citizens, and that SST also have capabilities installed in the Azores, precisely due to its strategic positioning.

## **To Conclude**

There is an absolute need of a national development of the space sector also focused in the Atlantic, especially the North Atlantic, that enables it to continue to be a strategic asset.

To this end, we must also ensure the national participation in international space policies and programs and also in commercial operations, assuming a comprehensive and integrated position that can contribute to maintain the Atlantic as an area of core interest to Portugal and to Europe and as a fundamental part of Life on Earth.

## The Azores Space Structure Mission

**Luis R. Santos**

*Estrutura de Missão dos Açores para o Espaço*

It is truly the subject of the day – shifts in world geopolitics and the Atlantic! And by choosing it as the subject of the Seminar it is my belief that the organizers were simultaneously intending to do 2 things:

- on one hand, certainly promote a lively and rich debate about a matter that concerns us all!
- but also, on the other hand, putting the speakers in “troubled waters” .... given the propensity for error that exists with any predication on this subject these days.

Precisely because of that, and even if I do have a military background, I will purposely and with your benevolence excuse myself from going down that road and making any comments about geopolitics, the current international scenario or even the place of the Atlantic in it, thus, also keeping with that very sound military saying which is.... to not go beyond your rank and expertise! I am here to talk a bit about the work that we, at the Regional Government of the Azores, the Mission Structure for Space, have been doing in regard to the Space and Space related sectors in the Region, hoping that, with it, you will be able to extract some pointers of relevance to the overall subject of this gathering.

In that context allow me to make two initial comments, before I move on to the subject of my talk:

First, it is of the utmost importance that these reflections that have the Atlantic at its core – this big Ocean space that unites us politically, institutionally as well as physically – happen not only in Brussels, Washington, or Lisbon, but can happen in the Azores, as well as Madeira and partners further to the South! And for that I commend the IDN and particularly the Atlantic Centre for taking the bold step of creating this wider net of reflection beyond the traditional centres of decision.

No comprehensive discussion of Defence strategies or others related with this geopolitical space will be truly complete without considering and positively estimating the regional autonomous component and, in that context, articulating the action that the various levels of power can contribute to the pursuit of national and international objectives.

In the case of the Azores, history and the various economic and social contexts have already made clear, repeatedly, the unique geostrategic potential of the Azores for the definition of broader political and geostrategic balances at the international stage.

The second preliminary comment is that it is essential that these reflections join the key institutions, such as the IDN, and the Atlantic Centre and the several branches of the Army, with Academia, but also involve and bring in institutions that work beyond that more traditional realm of Defence, exactly because today the World and the issues at stake require a 360 degrees view and integration of subjects that range from the risks of climate change, to digital threats and menaces of cybersecurity, human security, etc.

It is exactly in this capacity that I, as coordinator of EMA Espaço, believe that the development of the Strategy of the Azores for Space, deeply inter-twinned with the National Space Strategy and the European priorities can bring some contribution to this debate.

I invite you to visit the website [https://www.youtube.com/watch?v=ACvQYcDo\\_LI](https://www.youtube.com/watch?v=ACvQYcDo_LI) and <https://spaceazores.pt/en/> to watch the video about the Azores' strategy for Space.

What you have seen is a more exciting view of what is the intention behind the adoption of a Regional Strategy for Space, which we know is as unique as is challenging and demanding.

The Azores have provided, via its geography, infrastructures and human capacity, the stage for the development of some projects and initiatives that have boosted our own, but certainly also the national profile in the space sector in Europe and Internationally.

By defining 5 priority areas for the future development, we want to enhance that profile as a transatlantic hub for space activities, whilst simultaneously growing the number of jobs, science, investment and attraction for younger generations that this sector can have.

And what does that have to do with the Atlantic and the geopolitical equilibriums around it? At first glance nothing. But if you look deeper everything.

NATO and the EU are in the context of revising and working on their main Strategic documents (in the case of NATO a new Strategic Concept, in the case of the EU the Strategic Compass) that will influence defence strategies and others for the decade to come. Well, both include at their core a wider reflection about what dimensions should that defence mean and surely issues like the threats from disrupting technologies, climate change, cybersecurity and communication will all play a role in it.

And the Azores can help Portugal, the EU, and NATO achieve some of these dimensions.

When we, in the Strategy of the Azores for Space, decided that there should be a priority area regarding the **development of applications based on space data** we were thinking that everyday thousands of satellites orbit the Earth and provide massive amounts of data, largely free to use,

and that if we can captivate or develop ways to treat and “translate” them into issues that concern us, but certainly also concern others in other geographies, which can range from the control of maritime traffic in the Atlantic space, to the prediction of climate change and patterns of behaviour of species, we would be serving the EU's objectives as a whole, or of groups of Member States - for example in the framework of the Regional Macro Strategies.

Or when we decided that the **promotion of a wider and safer access to space** is of paramount importance for the Azores, we were not only thinking of the concrete, measurable positive effects that the development of a spaceport in the region can have in terms of foreign direct investment, jobs or the development of a scientific and technological cluster but were also aware of the needs and objectives of Europe in this sector in the coming years.

In this respect it is very relevant to mention the approval by the European Commission, just 10 days ago, of the new “Space package”, this is a regulation on secure connectivity based on space technologies and a joint communication on an EU approach to space traffic management.

The Azores can play a very important role in both and should be seen as a gateway to the EU's objectives in both these domains. Specifically, and regarding secure connectivity, as an EU territory from where satellites and connectivity services can be launched within the meaning of article 5.5 of the proposed regulation.

On the other hand, and regarding the proposal for a European space traffic management service, by greatly expanding the SST capacities already installed on the islands of Santa Maria and Terceira, as well as those that will be installed on the island of Graciosa.

In conclusion:

- The Azores already provides several important services in areas related with 360 degrees view of the Atlantic and its defence.
- For that, its geographic position is important but it is not the decisive factor. There are competitors and equally good locations for a number of the activities that we are doing and intend to grow in the future with a focus in the Atlantic.
- The focus in the Atlantic as a geopolitical space of contention will not decrease in the immediate future and the services that can be provided will also grow in the future, because of regional, national, and international attention.
- It is of the utmost importance that there is articulation between the regional, national, and European levels to make full use of the possibilities that are at our disposal.
- One can't happen without the other.

- And finally, speed is of the essence. The world is not “moving any slower” and if Portugal, its institutions, want to place the country at a different level in the international level also in this sector, conjugation of efforts is fundamental.

## **Closing Remarks by Prof. Luís Andrade, Centre for Humanistic Studies, University of the Azores**

First of all, I would like to compliment my colleagues at the University of Azores and the Undersecretary for the Presidency for European and External affairs. Thank you very much for all the support of the Regional Government to this very important event.

I would also like to compliment and thank the Coordinator of the Atlantic Centre for the organisation of this event.

I would also like to compliment and thank the Director of the National Defence Institute for the support and for organizing this event at the University of the Azores, taking into account its geostrategic location.

I would also like to compliment the Member of Parliament, the Regional Secretary, the General Officers here.

I would like to say a few words concerning this event. I believe it was a very productive event, as it raised ideas and questions to think about in the near future.

In order to finalise, even though I am not representing formally the University of Azores, I am a member of the Humanistic Centre, and I have been at this University for almost fourteen years, so I am sure that the Director would be glad to say that any further events with you will be welcome, so thank you all very much.

## **Closing Remarks by Prof. Helena Carreiras, Director of the National Defence Institute**

Exmo. Sr. Presidente do Governo Regional dos Açores, José Manuel Bolieiro

Exmo. Sr. Professor Luís Andrade, Professor Catedrático da Universidade dos Açores

Exma. Sra. Coordenadora do Centro do Atlântico, Professora Licínia Simão

Distinguished guests,

Ladies and gentlemen,

We gathered here today, on February 25<sup>th</sup> 2022, one day after the invasion of Ukraine by Russian forces, an event that has already been considered the major challenge to the world order since the second world war. One that will change the face of Europe forever.

Some can find it difficult to concentrate on another topic right now. But, on the contrary, if we can learn something from this hideous moment – and this seminar proves it – is that we need to be better prepared to build and sustain peace and security worldwide.

That it is time to realise that our action is needed to help prevent the repetition of the same mistakes that have allowed the conditions for new and dangerous conflicts to unfold.

That it is time to look around – namely to the Atlantic – and understand how vital its security is, and how critical our action is to understand the nature of threats, the different security needs at stake; to engage in dialogue with partners and define ways ahead, to foster capacity building.

We will live in a more dangerous world, where peace and democracy need to be defended much more vigorously. So we will need to better boost our efforts to ensure we will not be regretting inaction, or as Timothy Garton Ash noted yesterday in the Guardian, that we will not remain “clothed with nothing but the shreds of our lost illusions.”

Let us get to work.

## **Closing Remarks by Prof. Licínia Simão, Coordinator of the Atlantic Centre**

Exmo. Sr. Sub-Secretário Regional da Presidência do Governo Regional dos Açores, Doutor Pedro Faria e Castro

Exma. Sra. Diretora do Instituto da Defesa Nacional, Professora Helena Carreiras

Exmo. Sr. Professor Luís Andrade, Professor Catedrático de Relações Internacionais da Universidade dos Açores e Investigador do Centro de Estudos Humanísticos.

Distinguished guests,

Ladies and gentlemen,

Today's seminar has been extremely rich in terms of the issues that were discussed: from scientific cooperation, to security concerns, from trade to space-related issues, just to name a few. It has also been a privileged occasion to deepen dialogue among partners engaged in making the Atlantic a space of freedom and security.

The international security context is becoming increasingly tense. As we gather here, in this lovely archipelago, European security and the foundations of international relations are being challenged in Eastern Europe by Russia's aggression on Ukraine. This blatant violation of international law leaves us all vulnerable. This is the reality in Ukraine today, but it can certainly be the reality of any other country where aggressive powers see an interest in. The Atlantic is not immune to great power competition and reaffirming the principles of our cooperation in this important area should be a priority.

As I had the occasion of mentioning in my opening remarks, the Atlantic Centre is perfectly aligned with the Portuguese foreign policy priorities of multilateralism and the promotion of cooperative security in the Atlantic. This is the work we have been promoting. Multilateralism requires a great deal of effort, a lot of time, but ultimately, we are stronger together and policies deliver better results when they are shared among partners.

This seminar provided us with the opportunity to consolidate our collaboration with the Azores, both with the University of the Azores and the Regional Government, and I would like to publicly express my appreciation for all the support granted to the initiative. I would also like to take this occasion to read a short statement by Minister João Gomes Cravinho, which he has personally asked me to share with you.

The Minister's words:

“The commitment of the Portuguese government in promoting security and cooperation in the Atlantic area stands as a national priority, to which the Atlantic Centre is actively contributing. Over the last years, this initiative has consolidated, rallying the support of a growing number of national and international partners, and standing as a privileged framework for dialogue, knowledge production and capacity-building, linking the North and the South of the Atlantic.

This seminar is an example of these objectives, building on a very fortunate collaboration with national partners, the National Defence Institute and the University of the Azores, and having the contributions of a wide array of very knowledgeable speakers from across the Atlantic.

Despite the upcoming transition in the Portuguese government, we expect continuity in the priority attributed to the Atlantic Centre and a continuous investment in its development. The unequivocal results of the elections make us confident that the Roadmap for the development of the Centre, which Portugal developed and that has recently been endorsed by our international partners, will be fully implemented, consolidating the existence of the Centre, namely here in the Azores.

Allow me a final word of appreciation for the unwavering support the Atlantic Centre has received from the Regional Government of Azores and for the availability of the Regional Under-secretary of the Presidency, Pedro Faria e Castro, for attending today’s seminar. Your presence is very much appreciated, and I see it as an expression of the close collaboration we have kept in making the Atlantic Centre a success story, for Portugal and for the Azores. Today’s panels have addressed many of the issues we deal with from a security and defence perspective and have also addressed specific issues of relevance for this important area of our national territory. I trust the findings of this reflection will assist us in dealing with new and old challenges and in gathering more support for our commitment to peace and security in the Atlantic.

Thank you all for your presence.”

## **Closing Remarks by Dr. Pedro Faria e Castro, Undersecretary for the Presidency of the Regional Government of the Azores**

Coordinator of the Atlantic Centre,  
Director of the National Defence Institute,  
Vice-Rector of the Azores University,  
Speakers,  
Ladies and Gentlemen,

I commend and thank the Atlantic Centre, the National Defence Institute and the University of the Azores for organising, in the Azores, this 2<sup>nd</sup> module of the Intensive Course on Security and Defence.

The History of the Azores provides fertile ground for studying in-depth matters of security and defence. Our geography, our archipelagic condition, in the middle of the North Atlantic, are characteristics that, in themselves, require protection and security, which go far beyond the most elementary functions of the principles of Sovereignty.

The future of humanity has never been so intertwined with environmental evolution, with the security of our seas and space. In recent times the world has changed and by a lot. There is an erosion of the notion of international order. There is a return to protectionism in international trade relations. It is a world where each one tries to go their own way, outside the traditional context of international negotiations.

Today we live in a more fragmented world, where everyone runs for themselves. It is a world of insecurity. We are witnessing the phenomena of migration, terrorism and populism and the disintegration of some structures which we thought were safe.

This also happens in the Azores, where it is necessary to reflect very carefully on the grounds we walk on.

The Azores must be alert to this extremely rapid change.

In this context of a world undergoing a very rapid change, the regional situation deserves to be approached with a great critical sense and great foresight. In such a context, it is not advisable to remain with the inertia of a model that does not face what the situation demands.

The Region must build an even stronger relationship with the European Union.

The Region must build an even stronger relationship with the United States of America.

The Region must build an even stronger relationship with the international community.

Ladies and Gentlemen,

The Azores want to make their contribution to the exploration of space and the oceans.

We want to be interested and participant players, with the sea that surrounds us and with the space that shelters us, of discovery, of technological innovation, of the future of scientific exploration.

Just like yesterday, today, we want, in the Azores, to be a meeting point, crossroads for modern navigation, collaborators in the discovery of the unknown.

The Atlantic Ocean "protects" the Azores. The Azorean people identify the sea with a unique familiarity.

Vitorino Nemésio knew very well when he stated: for us Azoreans, geography "is worth as much as History".

Learning from the past, in which the Azores were a meeting point of maritime routes, of the union of populations and of commercial transactions, today we want to explore the future of the world of innovation and knowledge, of the construction of the common house of humanity, in which the Azores, in the middle of the North Atlantic, can and must participate, with its increasingly appreciated characteristics, in the exploration of science, for the progress of our communities.

Ladies and Gentlemen,

The evolution of times, with technological innovation, the growing interdependence of nations and the consequent evolution of science have been factors of the greatest relevance in the growing value of the sea and space of the Autonomous Region of the Azores.

The privileged location of the Azores, in the middle of the North Atlantic Ocean, between the old Europe and the New World, demands from us an increasingly responsible participation in the national and international debate on climate change, the blue economy, and the safety of goods and people, who enjoy our vast Exclusive Economic Zone and the space that surrounds us.

In these times of uncertainty at planetary level, when the old leaderships are no longer unquestionable and when the security of populations is increasingly lower, the Azores, with its islands, but above all, with its sea and space, must know how to find its most appropriate position in order to be able to participate in the dividends which its geographical location of crossway may bring.

The Azores have skills and conditions which are of interest to the country and to Europe. We have opportunities to develop research in the areas of the sea and space. We must know how to

create opportunities to take advantage of these resources for the future, for the development of our Region.

The Azores are changing paradigm to become less peripheral and more relevant in global competitiveness, taking better advantage of Community financial instruments and of the potential of our endogenous resources.

We cannot be afraid of new or innovative challenges to strategically achieve a new direction.

The Azores are increasingly betting on an economy based on the economic enhancement of its Exclusive Economic Zone. And, in the words of Professor José Enes, "in the geostrategic potential of the Atlantic territory."

This new commitment of ours will involve the development of technology for strategic use, within the framework of international concertation, the inventory and progressive exploitation of our sea, and the support and creation of appropriate research structures, and the organisation of surveillance and defence systems.

Ladies and Gentlemen,

The affirmation of the Azorean culture and identity, of the democratic values of Autonomy, of the Region's political participation on the National, European and world stage, strengthens the position of the Azores in the Country.

The distance, size and dispersal of our Region found an adequate response in the historic conquest of our Constitutional Autonomy in 1976, underlined by four decades and two cycles of self-government.

But our future is even more important than our past.

We are inaugurating a new culture of Autonomy, more adequate to the new challenges.

An Autonomy of Accountability.

The Autonomy of Accountability is a relationship of mutual respect between the Regional Government and the Legislative Assembly and of cooperation with the Portuguese Republic and the European Union in defence of the Region's interests.

Accountability for the sustainable development of the Azores must imply common recognition, involvement and in subsidiarity, of our specificity and potential in the regional, national and European contexts.

We have challenges of shared interest, for example: the sea, space, security, justice and defence.

Autonomy always has its say. The option must be that of co-responsibility.

The State can and must fulfil its sovereign obligations in cooperation with the Region.

There are no issues only of the responsibility of the Region or only of the State, when what matters is the development of the Azores.