The Academia das Ciências de Lisboa (ACL) and the Multidisciplinary Ocean Observation

On behalf of the Academy of Sciences and on my own behalf, I extend a warm welcome and greetings to all those present, specifically acknowledging Academicians Luís Menezes Pinheiro and Miguel Miranda—directors of the two institutions co-organizing this event on "New Trends in Multidisciplinary Ocean Observation" with the Academy.

In January 2024, the ACL established a collaboration protocol with the National Committee for the Ocean Decade (*Comité Nacional para a Década dos Oceanos — CNDO*) with the aim of promoting, encouraging, and disseminating interdisciplinary scientific research. This initiative seeks to foster action in Portugal towards the realization of the objectives of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030), with a particular focus on the Atlantic and international cooperation.

The Academy of Sciences — notably through the activities of its Institute for Advanced Studies — has begun disseminating scientific discourse regarding the Ocean and is planning a colloquium for 2025. During the 2025 Academy Day in July 3rd, the Ocean served as a central theme, presenting the ACL with new challenges regarding its mission. The need to coordinate the significant scientific potential of the numerous national research units focused on this subject, while enhancing their international standing, presents the ACL with opportunities and responsibilities that it must not decline.

In July 2025, a Commission was appointed within the Academy of Sciences to oversee and promote Ocean Science, with a specific mandate to support the implementation of the Protocol with the CNDO. This commission is composed of Academicians Maria Salomé Pais, Ricardo Serrão, and Miguel Miranda. It is coordinated by this later academician who currently serves as Vice-President of the Class of Sciences and as Director of the Atlantic International Research Centre (AIR Centre) — an institution that, just two days ago, celebrated its tenth anniversary in this *Salão Nobre*, with the Secretary of State for Science and Innovation in attendance.

Given the great contemporary relevance of its content, allow me to quote one of the founding scientists of this Academy in 1779 — the naturalist José Correia da Serra— from his paper presented on 28 February 1799 to the Royal Society of London (of which he was also a member), titled *"On the Submarine Forest on the East Coast of England":*

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In the present state of this science, every well ascertained fact increases our still narrow stock of real knowledge; when, on the contrary, the reasonings we are enabled to make, are at best but ingenious guesses, which too often bias and mislead the judgment. I shall therefore en deavour, in this Paper, to give, first, a mere description of the object, unmixed with any systematical ideas, and shall after wards offer such conjectures on its cause as seem to me to be fairly grounded on observation.

At the session of the Class of Sciences on December 4, 1997, the mathematician Jacques-Louis Lions — who served as President of the *Académie des Sciences de Paris* and was a foreign corresponding member of the Academia das Ciências — delivered a lecture titled ***Remarques sur les équations de la climatologie*** (Remarks on the Equations of Climatology). Presenting an aspect of an ambitious project to model the Earth system, comprising the fundamental subsystems: the atmosphere, the liquid ocean, the solid Earth, the cryosphere and the biosphere — drawing upon the pioneering treatise "**Physics of Climate"** by J. P. Peixoto, the Portuguese geophysicist who was President of the ACL in the 1980's and 1990's, and A. Oort — J.-L. Lions highlighted several open problems. He also emphasized the necessity of observing the oceans, particularly for the study of complex free surfaces, such as the interface between the ocean, the atmosphere, and the solid Earth.

Almost thirty years later, this conference is taking place today to provide an update on the multidisciplinary trends in ocean observation — a branch of the geophysical sciences that is essential for the refinement of Climate System Models and Earth Surface Exchange Models.

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