Listen to the Ocean

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Dr Paul M. DiGiacomo, Chief, Satellite Oceanography and Climatology Division, NOAA/NESDIS Center for Satellite Applications and Research

Lloyd’s Register Foundation has been delighted to support two apprenticeships on the globally unique Western Channel Observatory. Their success is testament to their ability and to the care and dedication of the whole PML team.”

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PML plays a significant role in the development of ocean colour as an Essential Climate Variable for the Global Climate Observing System through the European Space Agency Climate Change Initiative. PML’s considerable expertise and experience is ideally suited for this important activity.”

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Pioneering research for sustaining the global ocean, its ecosystems and resources for the benefit of society’s health and prosperity (e.g. climate change)

Independent, impartial provider of policy relevant scientific research and advice on the marine environment (e.g. marine plastics)

Research consistently recognised as being of national and international significance and relevance

Impactful science, such as our contribution to the National Ecosystem Assessment, changing the agenda on how to manage coastal systems

Interdisciplinary approach in scientific research for addressing complex societal challenges (e.g. integrated planning for coastal communities)

Our Earth is facing two fundamental challenges:

managing global environmental change and providing resources to support over 9 billion people, by 2050. The role of the ocean in meeting these challenges is crucial for the sustainable future of our own society.

The health of our oceans and seas is inextricably linked with the health of our planet and all life on Earth.”

António Guterres, United Nations Secretary-General, The Ocean Conference, New York, 5 June 2017
Our interdisciplinary approach brings together researchers from different scientific disciplines, working collaboratively to create and apply new knowledge and thinking. This approach recognizes that societal challenges are interlinked and require the engagement of multiple science areas to provide relevant expertise, experience and evidence-based solutions. At the heart of this approach lie our five integrated, thematic Science Areas.

**Sea and Society**
Integrating evidence to understand the consequences and benefits of the interactions between society and the marine environment, to improve outcomes and support sustainable ocean stewardship.

**Earth Observation Science and Applications**
Exploiting Earth observation data to conduct fundamental and applied research on physical and ecological processes in oceanic, coastal and inland waters.

**Marine Biogeochemistry and Observations**
Quantifying key physical and biogeochemical processes at the ocean surface and in coastal seas, in order to understand and predict the functioning of the global Earth system in a changing world.

**Marine Ecology and Biodiversity**
Exploring fundamental ecological processes and interactions that support biologically diverse and productive marine ecosystems, to understand changes in marine ecosystems and their resilience.

**Marine Ecosystem Modelling and Predictions**
Developing and maintaining scalable modelling frameworks that assess freshwater and marine systems (from estuaries and shelf seas to the global ocean), for impact on policy and decision making.

"Our strategy reflects the importance of marine science in the quest for a sustainable ocean. Delivering interdisciplinary research through highly skilled individuals and cutting-edge facilities, ensures PML’s science remains at the forefront of the challenges and opportunities ahead for the benefit of society."

Admiral Sir James Burnell-Nugent KCB CBE MA, Chairman, Plymouth Marine Laboratory
How we look at challenges and questions

Our research is a unique combination of observation, experimentation and modelling activities, working together to provide a greater understanding of the dynamic and complex marine environment to provide pioneering evidence-based research for understanding and tackling current and future challenges.

Pioneering scientific evidence at varying scales

Our science and interests stretch from local to global, from lakes to oceanic environments. We collaborate in research projects across the world and the length and breadth of the global ocean from the poles to the tropics. Our strategic research feeds into national and international strategies such as the UK and other governments or regulators, and maps onto strategies of public sector bodies, space agencies, charitable foundations and philanthropists, NGOs and industry.

What motivates us to undertake such in-depth and integrated research?

The ocean and seas sustain all life on Earth. Science informs society on the opportunities and choices we have, the trade-offs we need to consider and the pathways to sustainability open to us. This requires an in-depth knowledge of how the ocean and seas function, and our impacts upon them, so that we can predict how they may respond to future change.

Why are we a partner of choice when working towards a sustainable future?

Our research is globally recognised with many of our scientists invited members of influential, international and national bodies. Through our science we contribute to achieving targets and aspirations set out in national and international directives and goals for a sustainable future. This includes addressing many of the UN Sustainable Development Goals, the European Marine Strategy Framework Directive and the UK Government’s 25 year plan to improve the environment.
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The ocean and seas sustain all life on Earth. Science informs society on the opportunities and choices we have, the trade-offs we need to consider and the pathways to sustainability open to us. This requires an in-depth knowledge of how the ocean works and what functions and key impacts upon them, so that we can predict how they may respond to future change.

Why are we a partner of choice when working towards a sustainable future?

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W e must not forget the ocean: whenever it rains, or the wind blows, or when we take a deep breath of fresh air we should think of the ocean. The work of the scientists at PML helps us to see the part the ocean plays in our lives, to use it sensibly and to learn how to live our own lives in a way that will give the ocean a future, and, with it, give us a future.”

Professor Ian Boyd, Chief Scientific Adviser at the UK Government Department of Environment, Food and Rural Affairs

The critical role PML is playing, providing us with these excellent testing facilities at sea, is a uniquely invaluable service to UK industry, which we have no other way of duplicating.”

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Our science has far-reaching impact, from highly cited scientific papers to providing evidence for policy and industry, as well as training the next generation of marine scientists. We are committed to making our science accessible to a wide audience to help ensure a healthy, productive and resilient ocean for present and future generations.

PML science has influence at the highest levels

- Our science can be referenced in policy documents, such as publications by the United Nations Food & Agriculture Organization and by the UK government, e.g. the “Future of the Sea”, and has informed the Convention of Biological Diversity on setting the scientific criteria for Ecologically or Biologically Significant Marine Areas. Evidence we provided on microplastics ultimately led to a UK ban on microbeads in cosmetics.
- We have key roles in the writing of Intergovernmental Panel on Climate Change reports. We played an active part in the UN Ocean Conference (2017) which resulted in the adoption of UN resolution 71/312. We have participated in each UN Climate Change meeting (UNFCCC COP) since 2009, working towards a sustainable low carbon future.
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Patron: James Cameron
Explorer, environmentalist and film-maker.

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