

World Ocean Day

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Vladimir Ryabinin, UNESCO

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“The greatest impact shipping can have to protect our oceans is by reducing its carbon emission.”

Peter Aylott, UK Chamber of Shipping

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JordanRobins / Ocean Image Bank



How can space data shape more robust coastal management plans?

In a turbulent climate, coastal managers can plan realistic possibilities and make better investment decisions by relying on insights from space data.

Using insights gleaned from Earth observation research is a win-win for coastal managers, says Martin Jones, coastal programme manager at satellite data processing company ARGANS.

Why we need space data

Space data can guide wiser investment decisions that protect and develop the coastline sustainably. This is especially true for coastlines whose change may accelerate due to climate change or for areas where resilience needs to be added as demographic changes develop more infrastructure near the coast.

“Nature-based solutions, for example, may have acted as a good buffer in the past from coastal erosion and other risks, but as more people move to the coast and more infrastructure — such as ports and railways — is built there, the landscape and associated resilience changes. Moreover, with climate change comes more extreme storms and rising sea levels. It means coastal investments are at risk and can become costly,” warns Jones.

Holistic picture of coastlines

To efficiently analyse risks — ARGANS monitors and maps coastal processes using images from the European Space Agency to build a full picture of the coasts’ profile, factoring in elements such as coastal erosion, marine litter, saltmarshes, mangroves and carbon sequestration in seagrass.

“We look at all these variables, put this information together and provide data-driven evidence that can support investment decisions, rather than making assumptions based on anecdotes,” says Jones.

Looking back to plan ahead

As well as understanding the current coastal scenario, planning requires observing historical patterns. ARGANS has access to data going back three decades, allowing a deep dive into the coastline’s history.

“This is one of the reasons we like using the scientific instruments from the European Space Agency as the Sentinel Mission is well calibrated, and you can see a change in an image going back years,” says Jones.

“These images and data enable us to provide evidence for managers to form the basis of their management plan against the — obvious current and increasing — effects of climate change.”



Martin Jones
Coastal Programme
Manager, ARGANS

WRITTEN BY
Sarah Brown

Paid for by **ARGANS**

Find out more at
argans.co.uk



Ocean Decade: building knowledge to create the ocean we want

The ocean is a vital resource that sustains life on our planet, but it is facing multiple threats, including climate, pollution and overfishing. World Oceans Day on the 8th of June is when the international community comes together to recognise the vital role the ocean plays for life on Earth.

This year, the message is simple: we have a once-in-a-lifetime opportunity to act. This opportunity is called the United Nations Decade of Ocean Science for Sustainable Development 2021–2030, the ‘Ocean Decade.’

Why is the Ocean Decade 2021–2030 important?

Led by the Intergovernmental Oceanographic Commission of UNESCO, the Ocean Decade is a global initiative aimed at unlocking knowledge to restore marine health and promote a sustainable ocean economy. The initiative brings together scientists, policymakers and stakeholders from around the world to advance ocean science and technology; improve ocean governance; and foster partnerships that lead to sustainable and equitable use of the ocean’s resources.

It has set off to unlock knowledge-based innovative actions to address 10 major challenges, from beating marine pollution to reconnecting humanity with the ocean and ensuring the sustainable use of ocean resources.

Know how to build a sustainable ocean economy

Building a sustainable ocean economy is key for the Ocean Decade. It combines the sustainable use of ocean resources for economic growth and the potential to create millions of jobs in activities such as fisheries and aquaculture, while preserving marine health.

The initiative will provide the knowledge and tools necessary to achieve this balance, with a big priority on mapping the entire ocean floor by 2030. This is essential for understanding

the ocean’s complex ecosystem, identifying areas that need protection and providing valuable biodiversity data — critical for ocean management and conservation.

Around 25% of the ocean has been mapped — the fruit of efforts by the General Bathymetric Chart of the Ocean (GEBCO) and the Nippon Foundation-GEBCO Seabed 2030 initiative. But to meet the challenge, governments, industry and scientists must work even closer together. Through the Ocean Decade Corporate Data Group, private sector leaders aim to unlock privately-owned data sources for ocean mapping and other key ocean management areas.

A sustainable future for society and the ocean

The Ocean Decade is a unique opportunity to transform the way we interact with the ocean, articulated by scientific expertise. Codesigning knowledge to meet societal needs, we can develop solutions to revitalise the ocean and ensure that it remains a vital resource for generations to come.



Dr Vladimir Ryabinin
Executive Secretary,
Intergovernmental
Oceanographic
Commission, UNESCO

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or **+44 (0) 203 642 0737**



**We must ensure
that life on land
does not destroy
life below water.**

~**Leticia Carvalho**, Head of
Oceans and Freshwater, UNEP

Ron Watkins / Ocean Image Bank



Peter Aylott
Director of Policy,
UK Chamber of
Shipping

International and domestic action: crucial for shipping to meet net zero ambitions

Our oceans provide sources of food and unique wildlife and impact our climate and the air we breathe. They are also vital conduits for shipping and transportation.

Shipping takes its responsibility to protect oceans seriously and has already made steps to do so by, for example, switching fuels to help improve air quality around our coasts. Travelling more slowly to try and avoid whale strikes; reducing single-use plastics; and investing in research to greater understand the impact of underwater noise on wildlife are all initiatives currently underway.

How to make shipping more ocean-friendly
Although transport by sea is the most carbon-efficient mode of transport, the greatest impact shipping can have to protect our oceans is by reducing its carbon emissions.

The industry faces a crucial few months as key decisions are made on a decarbonisation pathway for shipping. We are clear that current international targets to cut shipping emissions by 50% by 2050 don't go far enough, and we need to see greater ambition. However, this can only be achieved through international agreement.

International and local net zero commitments

We are working with partners to show why it is imperative that the International Maritime Organisation, the UN body that will agree on new targets next month, commits to net zero carbon

emissions by 2050. We also need the UK Government to be using its diplomatic weight to convince other countries to agree to this more ambitious target.

Later this year, we will also see a refreshed Clean Maritime Plan. This is the UK's blueprint for how to reduce greenhouse gases and wider pollutants from the maritime sector. This plan must work alongside international agreements

and targets so that we have an accurate picture of the progress shipping is making to decarbonise. Crucially, it also needs to build on the limited public funding to date with significant new investment.

Local investment can help protect seas and oceans

New research and development; a financial environment that rewards green investment; and an infrastructure system that can support shipping on its decarbonisation pathway will all require public investment. This is already happening elsewhere in the world and is helping to unlock significant private funding.

If we can achieve both the right targets and appropriate investment, the UK can be a global leader and blueprint for how to decarbonise shipping and help protect the seas and oceans — not just around our coastline, but across the wider world.

Current international targets to cut shipping emissions by 50% by 2050 don't go far enough.

From promise to prosperity: harnessing the blue economy for resilience and growth



WRITTEN BY
Dr Valerie Hickey
Global Director
of Environment,
Natural Resources
and the
Blue Economy,
World Bank

Too many countries have built their economies with their backs to the ocean. Since more than one-third of the world's population lives within 100 kilometres of the coast, we must embrace the ocean as an engine of prosperity.

From fisheries and aquaculture to coastal tourism and transportation, the economic value of the ocean is conservatively estimated to be USD3 trillion annually by 2030.

Ocean prosperity in fishing and aquaculture

The Food and Agriculture Organization (FAO) estimates that more than 1 in 10 people today depend on fisheries and aquaculture for their livelihoods. Fish are critical to food security and nutrition, particularly for the poor, and provide about 3.3 billion people with at least one-fifth of their average intake of animal protein.

The demand for blue food is only growing. For instance, the seaweed market is expected to grow to USD85 billion by 2026. With its ability to sink carbon, sustain marine biodiversity and unlock value chains, seaweed farming is one example of how to integrate development, climate and nature and make money. Moreover, this economy supports the women who derive their livelihoods from seaweed farming.

Supporting livelihoods while protecting oceans

Unlocking the economic potential of our ocean to deliver jobs and opportunity is critical. This is especially true for small island developing states — or large ocean states. The World Bank's roughly \$7 billion active ocean portfolio delivers growth and employs women and young adults while protecting marine biodiversity and the ability to sequester carbon.

We cannot have a world without poverty unless we unlock the power of the world's largest source of natural capital — the ocean. We also can't bend the curve of carbon emissions towards zero, nor stop the loss of biodiversity, without doing it sustainably.

Our investments focus on supporting policy reform, strengthening public institutions and building the infrastructure necessary to attract private investments that create local jobs and feed people. With help from PROBLUE grant resources that buy down the cost of borrowing, the World Bank supports activities like fisheries management in Bangladesh; tourism in Cabo Verde; tackling marine pollution in Indonesia. Together, this portfolio has positively impacted 50 million people — almost half are women.

Embracing the ocean as an asset today is how we will build the green, resilient and inclusive economies of tomorrow.

Cameron Venti / Ocean Image Bank





Taken en-route to a submarine dive at Devil Island, Antarctica, to survey the remnants of the Prince Gustav Channel ice shelf.

Credit: Professor Andy Shepherd, Northumbria University



Our researchers are working to raise awareness of the impact of single-use plastics and washing our laundry on ocean environments.

Promoting research about our ocean environments holds the key to ocean health

Climate change, melting ice masses, reductions in biodiversity and pollution are major threats to the health of our oceans.



INTERVIEW WITH
Professor Louise Bracken
Pro Vice-Chancellor
for Research
and Knowledge
Exchange,
Northumbria
University

WRITTEN BY
Angelica O'Toole

Academics at Northumbria University, Newcastle-upon-Tyne, are finding innovative ways to address ocean health challenges through interdisciplinary research. Interdisciplinary activity is a vital part of our research landscape and something I have been keen to nurture.

It enables rich, collaborative discussions from a range of diverse perspectives to generate high-quality research that provides solutions to real-world environmental problems. As we research oceans from a range of perspectives, employing such an approach benefits our understanding of ocean health and can help develop solutions to improve the ocean environment.

Climate change affecting ice sheets and ocean health

We are proud to have the largest group of glaciology experts in the UK at Northumbria University, working on critical research to understand the future of ice on earth. Our first-class team, led by Professors Andy Shepherd, Hilmar Gudmundsson and Adrian Jenkins, are leading major international studies on the interactions between ice sheets and oceans, examining how ice sheets and glaciers are changing in a warming world.

Their models of how melting ice sheets have responded to changing climates throughout history enable us to predict how they might respond to future change. This impacts not only the health of our oceans but also

our coastal communities. Others are developing new tools and solutions to help people living in areas threatened by coastal erosion, thawing permafrost and more. Their findings are helping governments to plan and manage the sea level impacts of climate change globally.

Addressing pollution to promote ocean health

Ocean pollution majorly contributes to the population decline in countless marine animals and ecosystems. However, many of us use chemicals every day without even stopping to consider the impact these products have on aquatic environments.

Our researchers are working to raise awareness of the impact of single-use plastics and washing our laundry on ocean environments. Environmental chemists and microbial ecologists are working to understand where, when and how synthetic chemicals and pharmaceuticals — even those we consume as pain relief medication — enter the ocean environment.

We can then identify the impact they have on environmental processes essential for supporting life on earth. This helps us to develop strategies for mitigating chemical pollution and address environmental justice concerns.

Managing water resources and legal accountability

Water management is another key area for consideration. As well as our ocean coastlines, there are more than 300 rivers and lakes worldwide shared

between two or more countries. Understanding pollution and biodiversity is especially important when the actions of one country can significantly impact others downstream.

As we've seen in wars such as those in Ukraine or Syria, shared water resources and bridges can be key targets. Through effective management, they can also help to drive cooperation and sustainable development.

There is a big question about who is legally responsible for our water resources. Legal experts such as Professor Ali Rieu-Clarke are contributing to global-level strategic planning and policy for the United Nations Sustainable Development Goals, which have placed transboundary water cooperation at the heart of the global response to future challenges.

Collaborative projects encourage innovation for ocean health

Billions of people remain living without safely managed drinking water, sanitation and hygiene services. Dr Muhammad Wakil Shahzad is exploring how we can use solar energy to turn seawater into clean drinking water using desalination techniques.

These examples highlight just a few of the innovative projects underway at Northumbria. There is no single solution to ensuring the future health of our oceans but combining the expertise of researchers across several academic disciplines can make a real impact.

Find out more at
northumbria.ac.uk/oceansresearch

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Recycling is not enough: why reusable packaging can tackle the plastic crisis

Plastic pollution in our oceans is a devastating environmental crisis. This is only going to worsen unless we turn away from single-use plastics and adopt the reuse and refill revolution.



WRITTEN BY
Steve Hynd
Policy Manager,
City to Sea

One recent study estimated there are now 171 trillion plastic particles in our oceans — an ‘unprecedented’ level. A separate Eunomia study found that 12 million tonnes of plastic is dumped into the ocean each year.

Impact of the plastic crisis in oceans

The impact cannot be underestimated. Plastic pollution in the ocean has a devastating impact on marine life, ecosystems and human health. From entangling or suffocating animals, blocking their digestive systems and causing starvation — to posing a threat to our food chain. One study estimated that we eat an average of one credit card of plastic a week.

Recycling won't stop plastic pollution

Recycling is often touted as the solution. This is especially true for companies whose shareholder value relies on irresponsible levels of single-use plastic production.

Coca-Cola, for example, has pledged to capture and recycle every bottle they produce, using this as a moral justification for the proliferation of a business model

that pumps out over 200,000 single-use bottles every minute.

We can't recycle out of this crisis. To start to address the flood of single-use plastics, we need to, firstly, reduce single-use plastics — and secondly, demand packaging alternatives. The most obvious is reusable packaging.

One study estimated that we eat an average of one credit card of plastic a week.

Reuse and refill packaging solutions

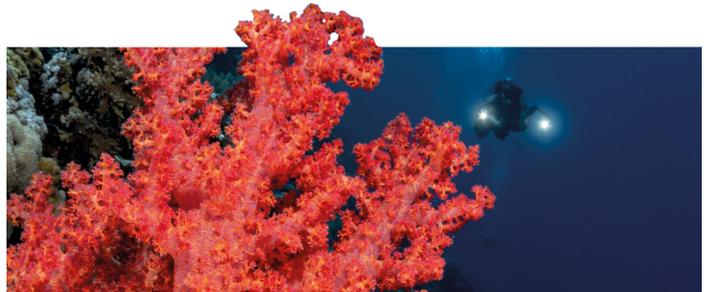
Take, for instance, single-use coffee cups. We use a few billion single-use coffee cups in the UK every year. A tiny fraction is recycled, but most end up in landfills — or as litter. However, there are alternatives.

In Bristol, for example, environmental charity City to Sea is launching a returnable cup scheme in the UK. It will mark this year's World Refill Day (16th June). Customers will be able to pick up a reusable cup from dozens of outlets across the city and return it to any participating store. This will be facilitated through the award-winning Refill app.

Reuse and refill packaging solutions are growing. They offer our best chance of stemming this crisis flooding our oceans with plastics.

Protect blue ecosystems to secure the future of human and non-human populations

When it comes to our planet's underwater blue ecosystems (kelp forests, coral reefs, seagrass meadows and mangroves), out of sight is often out of mind. However, this is changing.



Cinzia Osele Bismar / Ocean Image Bank



WRITTEN BY
Leticia Carvalho
Head of Oceans and
Freshwater, UNEP

As we learn more about the ocean — currently, 80% remains unexplored and 91% of species unidentified — we come to appreciate that its blue ecosystem services are essential to the wellbeing of our human and non-human populations.

Ways blue ecosystems give us life

From fostering fish populations — which ensures food security — to sequestering carbon and providing natural infrastructure that protects coastlines from storms, life below water is hard at work.

Local communities rely on blue ecosystems for their livelihoods and as part of their cultural heritage. Mangroves, for example, provide food, building materials, coastal protection and natural spaces for an estimated 2.4 billion

people living within 100 km of the world's coastline.

Many countries, particularly island nations, rely heavily on blue ecosystems' ability to attract tourism. The medicinal value of underwater resources is also being increasingly explored and recognised.

Damage we have caused and how to fix it

Despite the existential role that blue ecosystems play in the lives of human and non-human species, human activity is destroying them at an alarming rate. Between 2009 and 2018, about 11,700 square kilometres of hard coral — more than all the coral currently living on Australia's coral reefs — were lost.

In the past 50 years, up to 50% of kelp forests have been degraded. We lose a football field of seagrass

every 30 minutes. Between 1996 and 2020, mangrove forest loss led to an overall reduction of 139 megatonnes of carbon stocks. That is equivalent to approximately four times the global CO2 emissions of fossil fuel burning and the manufacture of cement in 2018.

We must ensure that life on land does not destroy life below water. We should undertake activities that truly value the nature-based solutions offered by our blue planet. By increasing our evidence base and advocating for sustainable blue economies that work with — instead of against — nature, we can better inform policy and show that nature is not a 'nice-to-have' but a must-have. It must be protected, sustainably managed, restored and financed accordingly.

How we respond to oil spills and work to prevent marine pollution worldwide

The power of collaboration can protect our oceans. We must all commit to preventing pollution and conserving marine resources for future generations through oil spill response and more.



Vania De Stefani
CEO, Oil Spill Response Limited

Paid for by
Oil Spill Response Limited



The ocean is a vital source of life and a cornerstone of our planet's ecosystems. It feeds billions of people, covers over 70% of the Earth's surface and provides 80% of the world's biodiversity. At Oil Spill Response Limited (OSRL), we recognise the incredible importance of our ocean and the need to conserve its wonderful marine resources for future generations. Many of our people are marine biologists, deeply passionate about protecting marine life.

Protecting our oceans through global oil spill response
Founded through a spirit of cooperation nearly 40 years ago, we are a global spill response organisation owned by our members, bringing together the world's leading oil companies and the wider industry to support pollution prevention. Our mission is to provide our members with resources to prepare for and respond to oil spills efficiently and effectively on a global basis.

Urgently responding to oil spills to combat pollution
Over the last three decades, we have attended over 400 spills, actively responding to spills that have impacted a wide range of environmentally sensitive areas like mangroves and marshlands.

Our involvement spans many types of spills — from shipping incidents, such as the MS Chitra spill in India to port spills, such as the spill from the vessel-jetty collision in Rotterdam. We are committed to working with our members, partners and stakeholders to develop good practices and share knowledge to ensure a healthy and sustainable planet for future generations.

Using oil spill expertise to respond to a range of emergencies
In addition to our work on oil spills, we have utilised our extensive experience to combat other forms of pollution, such as plastic pollution. Recently, we were able to lend our expertise to the response effort of the



Image provided by Oil Spill Response Limited

X-Press Pearl incident, involving a sinking container ship off the coast of Sri Lanka — causing a serious plastic pollution problem. Our team worked closely with local authorities and partners to develop and implement effective response strategies, utilising the same tools and techniques we use in oil spill response.

In 2022, we launched the GOWRS Oiled Wildlife Assessment Service, a ready-to-deploy four-person team delivered by a network of 10 leading wildlife response organisations. We are proud to play a part in making this service available to our members.

We are also collaborating with the Global Centre for Maritime Decarbonisation and their partners on developing emergency response procedures for ammonia — a potential future fuel for the shipping industry. We continue to innovate and take the valuable lessons we've learned with oil spills and apply them to save the ocean and support our members in their wider businesses.

Developing good practices is crucial to our work with the industry.

Collaborative efforts for effective spill response and good practice

Developing good practices is crucial to our work with the industry. By working collaboratively to identify and promote good practices, we can minimise the risk of oil spills and ensure that the industry is operating to the highest environmental standards.

Our good practice work covers a wide range of topics, including response planning, preparedness and the use of technology in oil spill response. We are working on a good practice guide for responding to plastic pollution, which will be published soon.

I am honoured to lead such a dedicated and passionate team at OSRL. Together, we are committed to protecting the environment and working to prevent pollution. The tides are changing, and together, we can make a positive difference in protecting our ocean and its precious resources.

Find out more at
oilspillresponse.com



WRITTEN BY
Jamie McMichael-Phillips
Project Director,
The Nippon
Foundation-GEBCO
Seabed 2030 Project

Mapping the power of bathymetry in ensuring ocean sustainability

Beneath the ocean's surface lies a world vital for our planet's future. But to navigate these waters, we must first map them with what is known as bathymetry.

A canvas of biodiversity lies hidden beneath the ocean's surface. It's a world shrouded in mystery, challenged by marine pollution, overfishing and degradation. As we explore solutions to these problems, we are missing fundamental information — a complete seabed map. From determining the ocean's depths to unveiling the intricacies of undersea landscapes, bathymetry plays a crucial role in ocean health and sustainability.

Bathymetry discovers unseen depths and opportunities

Our understanding of the relationship between marine species and their habitat can be greatly enhanced through the lens of seabed mapping (bathymetry). Maps of the ocean floor can identify biodiversity hotspots such as seamounts — regions of abundant marine life.

Having such data readily available paves the way for responsible fishing practices and guides the establishment of marine protected areas. For the growing field of aquaculture, seabed mapping acts as a compass, directing operations to suitable sites that strike a balance between productivity and minimal ecological disturbance.

In the fight against marine pollution, particularly plastic

litter, seabed mapping supports mitigation efforts. The journey of litter across oceans is complex, governed by various factors, including the ocean floor's shape. Bathymetry data, by improving the accuracy of ocean current modelling, helps predict marine litter transport and identify litter accumulation hotspots.

Mapping the path forward

As we journey further into the blue, our understanding and management of the oceanic world hinge on the maps we create. Yet, despite covering 70% of the earth's surface, only a quarter of the world's ocean floor has been mapped to date.

The Nippon Foundation-GEBCO Seabed 2030 Project aims to map the entire seabed by 2030, but it's a goal we can't reach without the collective efforts of global stakeholders. This includes

international bodies, research institutions and the public who, by using small devices to gather data or raise awareness within their communities, can join us on this mission.

Seabed mapping may not hold all the answers, but it certainly sketches a more hopeful future for the ocean and, in turn, all life on Earth. We must embrace this tool and venture deeper — together.

In the fight against marine pollution, particularly plastic litter, seabed mapping supports mitigation efforts.

The 3 foundations to success in supporting ocean solutions



WRITTEN BY
Chris Ostrander
CEO, Marine
Technology Society

Our most pressing and complex ocean-based challenges demand solutions powered by investments in workforce, innovations in technology and advancements in data capture

Our ocean is Earth's most valuable asset — it carries the bulk of global trade, refines half of the oxygen we breathe and is a source of protein to billions. As human activity continues to change our ocean, changemakers are bringing promising solutions that sustain marine biodiversity, protect coastal communities from rising seas and leverage the ocean to capture atmospheric carbon.

The success of these solutions depends on our ability to accelerate investment in three foundational areas: (1) building the future ocean economy workforce; (2) innovation and advancement of marine technology; (3) deploying that technology to capture data that informs solutions.

Ocean solutions require talented people

For traditional ocean commerce sectors (eg. shipping, fishing, energy), workforce growth over the past half century has kept pace with sector expansion. However, today, a rapid expansion of the ocean information economy (eg. climate and weather forecasting, ocean observing) requires alternative credentialing and certification programmes and inclusive recruitment mechanisms to grow the ocean workforce.

Investing in marine technology

Advances in marine technology has led to fleets of autonomous vehicles that can explore anywhere in the ocean, renewable energy systems that can sustainably power our economy and biotechnologies that bolster seafood supply and produce novel medicines.

Strengthening research and development in these technologies — and aligning their use in transformative new business models — is essential to ensure the economic viability and sustainability of ocean solutions.

Data to inform decisions

Despite covering more than 70% of our planet, the amount of ocean data collected each day is a fraction of what we generate on land and in our atmosphere. To understand the potential value of ocean-based climate, pollution and resource solutions, we must understand how the ocean functions to deliver maximum impact at minimal risk.

Our ocean is at a critical juncture. The collective impacts of our way of life continue to mount, at a time when our livelihoods depend on the ocean more than at any time in human history. As with all great solutions in our past, the answers to the ocean challenges facing us today can be met with wise investment in a talented workforce, innovative technologies and data to inform decision-making.



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Paul Polman
Business leader, campaigner, co-author of "Net Positive"



Sarah Sclarsic
Voyager Ventures



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