

Ocean Acidification Research for Sustainability - OARS



United Nations Decade of Ocean Science for Sustainable Development

The UN Decade Programme of the Global Ocean Acidification **Observing Network GOA-ON**

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Ocean Acidification



The ocean absorbs around one quarter of the annual emissions of anthropogenic CO_2 to the atmosphere (WMO, 2021), thereby helping to alleviate the impacts of climate change on the planet (Friedlingstein et al., 2020). The cost of this process to the ocean is high, as the CO₂ reacts with seawater to change the carbonate chemistry of the ocean; this process is referred to as 'ocean' acidification' due to the observed decrease in pH. Ocean acidification threatens organisms and ecosystem services, including food security, by reducing biodiversity, degrading habitats, and endangering fisheries and aquaculture. Ocean acidification will continue to increase – open-ocean surface pH is projected to decrease by around 0.3 pH units by 2081–2100, relative to 2006–2015, under RCP8.5 (virtually certain), with consequences for the global climate (IPCC, 2019). As the acidity and temperature of the ocean increases, its capacity to absorb CO_2 from the atmosphere decreases, impeding the ocean's role in moderating climate change.

7.0									
1950		2	2000	2015	5	2050		2	100

Global ocean surface pH (IPCC, 2022). The black curve represents a historical simulation of pH; colored curves indicate five possible future scenarios with high, intermediate, and low greenhouse gas emissions.

Seven Outcomes to Develop Ocean Acidification Science by 2030



What is OARS?







The OARS programme will build on the work of GOA-ON and its regionally-based hubs to foster the development of the science of ocean acidification, including the impacts on marine life and sustainability of marine ecosystems in estuarine, coastal, and open ocean environments. The programme will address the SDG Target 14.3 "Minimize and address the impacts of Ocean Acidification (OA), including through enhanced scientific cooperation at all levels" and is endorsed as

Goals and Impacts

The OARS programme provides a roadmap for ocean acidification research for the next Decade. Each of the seven OARS outcomes is led by co-champions, experts within their fields, who have assembled working groups tasked with finding the path towards achieving the seven outcomes by identifying the key actions, drivers, and enablers.

Together, the co-champions and working group members will put OARS on the path to achieving the overarching vision of this program by providing societies with the observational and scientific evidence needed to sustainably identify, monitor, mitigate, and adapt to ocean acidification from local to global scales. Countries can then better manage, mitigate, and reduce the impacts of ocean acidification on marine ecosystems, the goods and services they provide, and the human communities that rely on them. By delivering the seven outcomes, OARS will create a number of benefits: providing a clean, diverse, productive ocean capable of supporting the health, well-being, and livelihoods of human societies dependent on marine resources.



an Ocean Decade Action for the UN Decade Ocean Sciences Sustainable Of for Development (2021-2030).



References

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