



Ocean Science for Sustainable Development

An NSTF discussion forum

15-16 November 2023

The United Nations proclaimed a [Decade of Ocean Science for Sustainable Development \(2021-2030\)](#) to support efforts to reverse the cycle of decline in ocean health and gather ocean stakeholders worldwide behind a common framework that will ensure ocean science can fully support countries in creating improved conditions for sustainable development of the ocean.

“The Decade is the chance to put in place a more complete and sustainable observing system and feed the resulting data into a science-based informed decision-making system allowing increased reliance of our civilization on the ocean, its ecosystem services and, at the same time, preserving ocean health.”

The [National Science and Technology Forum \(NSTF\)](#) adopted this UN decadal theme for a focus of work for 2023. The NSTF made a [Special Annual Theme Award](#) for work in ocean science for sustainable development, at the [NSTF-South32 Awards](#) on 13 July 2023. The winner of the Special Annual Theme Award, [Prof Andrew Green](#), is invited to be our Keynote speaker at this discussion forum.

The aim of this online event is to bring together various researchers and professionals to highlight South African scientific work on ocean health, as well as the extent of data gathered through observation systems in South Africa. Gaps and challenges will be shared in this regard, to formulate recommendations.

Background:

The ocean is the largest body of saltwater covering 71% of the earth’s surface. It serves as a habitat for billions of organisms and it provides raw materials, transportation and food for human beings. It can be a source of energy for people, but most importantly, it is critical for the regulation of Earth’s climate and weather patterns. Due to the rapid growth of the human population, the ocean faces threats from overfishing, coastal developments, unsustainable resource extraction, massive oil spills and other pollution. Accelerating climate change is also causing dramatic changes to the ocean including acidification. All these threats have led to the deterioration of ocean health, resulting in the loss of ecosystems, biodiversity and food sources.

Sciences related to the ocean are important for our understanding of such changes – including marine geography, biology, physics and chemistry. The rigorous observations and documentation of the sciences are a necessary condition for insights into the ocean as an interconnected Earth system. Understanding it is critical for insight into the mechanics of climate change, including changes over land. However, for each

geographic area of the ocean, there is much still to be explored and ultimately understood. Preserving the rich biodiversity of the ocean depends on this more extensive understanding.

Decision making by those in positions of power, whether in private companies, or public, whether in government, the navy or as property owners, will determine the fate of marine life and ocean health, and especially the quality of life of people living on or near the coast, but ultimately all life everywhere on the planet. As we gain greater understanding of the interconnectedness of Earth's systems, science should inform those decisions to respond better to the challenges we face. Scientific data can also enable us to develop and innovate better technologies and engineering to help us adapt to a more turbulent and unpredictable natural environment, mitigate its multiple impacts on life and treat the ocean with the kind of respect that will lead to improved life – human and otherwise.

Themes:

This discussion forum will focus on the following themes:

- Unlocking the blue economies and protecting our coastlines from the effects of climate change, through marine geoscience
- What Earth observation is being done and data gathered in SA about the ocean?
- What changes are taking place across the ocean that are associated with climate change?
- How can we adapt and mitigate the negative effects of human-made changes in the ocean?
- How is ocean biodiversity changing and what are the expected impacts?
- How do these changes impact the economy and livelihoods in South Africa, and how can the negative impacts be mitigated?
- What legislation (NEMA) is in place in South Africa to gather data and regulate the use of ocean resources, decanting of waste into ocean water and measures to protect the coast? Are these sufficient?
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Purpose:

In support of the UN Decade of Ocean Science for Sustainable Development, the NSTF wants to raise awareness of the state of the ocean, and how its health is critical for survival of humanity and various lifeforms. This Discussion Forum provides a platform for government officials, researchers, engineers and other professionals to share their insights about the current state of the ocean, the challenges faced by marine lifeforms and possible solutions to implement. The NSTF aims to raise awareness (among others) of:

- Scientific, evidence-based approaches to understanding and finding solutions to the current ocean challenges.
- The importance of science, engineering, technology (SET) and innovation, including data collection and management, for understanding the earth and its ocean as a system, climate change, the ocean's biodiversity, the impact of human activities and the development of mitigating or long-term solutions
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Outputs:

As is usual for [NSTF Discussion Forums](#), a media release will be issued that summarises the most important issues and conclusions. The following outputs will also be made available on the event page and through social media platforms ([Facebook](#), [Instagram](#), [X-Twitter](#), [YouTube](#) and [LinkedIn](#)):

- Video recordings of speakers' presentations (subject to the speakers' agreement)
- Presentation slides (if available and subject to the speakers' agreement)
- Speakers' biographies

- Useful links (Feel free to let us know should you have any information that you would like us to consider posting here.)
- NSTF will engage the media on possible interviews and/or articles, and post on social media before, during and after the event.

References:

Visbeck, M. Ocean science research is key for a sustainable future. *Nat Commun* **9**, 690 (2018). [Ocean science research is key for a sustainable future | Nature Communications](#)

POLICY AND PRACTICE REVIEWS article (Front. Mar. Sci., 31 July 2019; Sec. Ocean Observation: Volume 6 – 2019). <https://www.frontiersin.org/articles/10.3389/fmars.2019.00470/full>

Duarte, C. M., Poiner, I., & Gunn, J. (2018). Perspectives on a global observing system to assess ocean health. *Frontiers in Marine Science*, *5*, 265.

Ryabinin, V., Barbière, J., Haugan, P., Kullenberg, G., Smith, N., McLean, C., ... & Rigaud, J. (2019). The UN decade of ocean science for sustainable development. *Frontiers in Marine Science*, *6*, 470.

<https://oceanexplorer.noaa.gov/facts/why.html#:~:text=Information%20from%20ocean%20exploration%20can,%2C%20tsunamis%2C%20and%20other%20hazards.u>