A unique group of leaders who are fast-tracking solutions to the most pressing challenges facing the ocean

FRIENDS *of* OCEAN ACTION

Ocean data for restoring our global commons

Context

Effective management of ocean resources is fundamentally undermined by a profound lack of information. Scientific data on ocean conditions is temporally and spatially limited. Information on human impacts on the ocean is even more sparse, hindered by the difficulties inherent in tracking human activity in the far reaches of the ocean. Without an accurate understanding of baseline environmental conditions and human uses, sustainable management of ocean resources is impossible.

However, we are in the midst of an explosion of new data on the ocean, creating enormous potential for advances in our understanding and stewardship of ocean resources. An exponential increase in the number and variety of ocean observing systems and other new data sources has created the prospect of a digital ocean ecosystem. Advances in processing techniques and visualization are rapidly expanding our ability to extract information from those data, and are enabling a wide array of tools to provide real-time information in actionable form to decision-makers and stakeholders – from policymakers and resource managers to resource users and consumers.

To capitalize on this revolution in data and technology, we will need breakthroughs in how ocean data is collected, shared and used. The amount of digital data is expected to double every two years, with data from ocean sensors growing faster than general data growth. Current ocean data infrastructure is not equipped to handle this exponential increase. It is hard to estimate how much data on the ocean currently exists. From the local to the global scale, from marine biology to vessel tracking, thousands of organizations and companies collect data, while individuals contribute a vast amount of data too. Approximately 70% of all digital production is generated by individuals. Aside from high-profile, dedicated ocean initiatives, the vast majority of ocean data remains hard to access.

Ocean data has a wide diversity of goals, motivations and needs, and is collected by a multitude of actors, each one holding a portion of the ocean data assets. At the same time, there is growing demand for insight and foresight to guide investments and policies, and a growing need to streamline local to global decision-making.

Several different data initiatives and platforms are working to liberate existing ocean data assets, but there remain significant barriers to ensuring ocean data is available to those who need it. Systemizing the available knowledge, data and science, and making it readily available to the public, decision-makers and policy-makers, and businesses worldwide will greatly alleviate some of the major challenges currently facing marine conservation.

The International Space Station orbits 255 miles above the Atlantic Ocean as the Sun's glint beams off the Caribbean Sea. © NASA

The amount of digital data is expected to double every two years, and is equally applicable to the growth and availability of ocean data. Data from ocean sensors is growing faster than general data growth, and ocean insights are increasingly sourced through the Internet of Things (IoT) infrastructures and remote sensing.

In fact, it is hard to estimate how much data on the ocean currently exists. From the local to the global scale, from marine biology to vessel tracking, thousands of organizations and companies collect data, while individuals contribute a vast amount of data too. Approximately 70% of all digital production is generated by individuals. Aside from high-profile, dedicated ocean initiatives, the vast majority of ocean data remains hard to access.

The data has a wide diversity of goals, motivations and needs, and is collected by a multitude of actors, each one holding a portion of the ocean data assets. At the same time, there is growing demand for insight and foresight to guide investments and policies, and a growing need to streamline local-global decision-making.

Several different data initiatives and platforms are operating but there is no all-encompassing platform combining them. Systemizing the available knowledge, data and science, and making it readily available to the public, decision-makers and policy-makers, and businesses worldwide will greatly alleviate some of the major challenges currently facing marine conservation.

What the Friends are doing

Friends of Ocean Action is helping to drive a new era of accessible, equitable and usable information about the ocean by liberating ocean data to support SDG 14 use cases.

New tools are needed if we are to radically shift behaviour towards our ocean, with a new approach and a system that is built around the comprehensive use of ocean data while making it easily interpretable and accessible to all. This system needs to not only liberate existing data but must harness the potential of new sensors that are rapidly coming online from private and public sector innovations as part of the Fourth Industrial Revolution. We must also take advantage of the increasing amounts of data being collected, new forms of data processing, and advances in machine learning capabilities. Simplifying data availability and access for all types of users is a core component of making ocean data applications, based on an open platform, readily available, and allowing the end-user community to inform and prioritize actions.

The development of these new tools requires unprecedented public-private collaboration that will design and build open-source platforms for ocean-related data while ensuring they are geared from the outset to serve the global public interest and to work together as part of a digital ecosystem for the ocean. Friends of Ocean Action has formed collaborations with key data providers and sensor enterprises, as well as major research institutions, governments, international organizations and broader civil society and business communities to build such a platform focused on informing several SDG 14 use cases and establishing best practices for ocean data governance and

sharing. Working with Cognite and REV Ocean, Friends of Ocean Action is helping to establish this ocean platform for the global public good with the aim of:

1. Contributing to data liberation from source systems by removing data silos and liberating data through a horizontal data platform,

2. Contextualizing the data in a common data model to enable cross-domain analytics and visualizations,

3. Making data available through open, high-performing and well-documented application programming interfaces (APIs) to make it as easy as possible to access data and build applications, and

4. Significantly contributing to the achievement of the SDG 14 targets and creating the enabling conditions for the UN Decade of Ocean Science for Sustainable Development 2021–2030 (strengthening of observations and data services represents a main objective for the Decade).

Friends of Ocean Action is working with Ocean Data Platform and the World Economic Forum's Centre for the Fourth Industrial Revolution to develop governance best practices for the creation of these ocean data tools, ensuring cooperation and communication in a complex and growing landscape. By bringing together the private sector, scientists and international organizations to strengthen cooperation and build a governance system that enables open collaboration with existing data providers and knowledge hubs for ocean data, we can unite knowledge and capabilities into a robust digital ecosystem for the ocean. The overall effort will require broad outreach and stakeholder involvement, and collaboration with governments, NGOs, academics, industry and data platforms such as IOC-UNESCO's Global Ocean Observing System (GOOS), International Oceanographic Data and Information Exchange (IODE), Ocean+ Data, OcToPUS and EMODnet.

Working in partnership with other major organizations and funders, Friends of Ocean Action aims to launch two initial use cases by 2020. These will be built on the Ocean Data Platform, which will help tackle key issues facing the ocean in the Action Tracks on Illegal, Unreported and Unregulated Fishing and Marine Protected Areas.

For more information, please contact: Ocean2020@weforum.org

Snorkelling and healthy coral in Rarotonga, Cook Islands © ChameleonsEye/Shutterstock.