

3rd GEO Blue Planet Symposium

*The Role of the Oceans in Earth's
Life Support System*



Symposium scope, objectives and agenda

Background

The Group of Earth Observations (GEO) “Oceans and Society: Blue Planet” Initiative (hereafter “GEO Blue Planet”) aims to ensure the sustained development and use of ocean and coastal observations for the benefit of society. GEO Blue Planet is a network of networks made up of participants from a variety of existing international organizations, regional organizations, national institutes, universities, government agencies, project groups and other interested parties. GEO Blue Planet is working to expand its network and identify pilot and prototype projects that support and link the users and producers of ocean and coastal observation information.

3rd GEO Blue Planet Symposium Scope

The 3rd GEO Blue Planet Symposium will serve as a forum for discussion of societal information needs resulting from the important role the oceans play in Earth's life-support system and the challenge of minimizing the impacts of human activities on the oceans while utilizing the resources of the oceans to meet our needs. The symposium will also be a platform for the participating communities to exchange information on their activities and identify potential pilot and prototype projects for GEO Blue Planet to focus on in the coming years.

Overview of Sessions and Anticipated Outcomes

Day 1

Sessions on Day 1 will aim to identify and review the drivers and pressures on the oceans, the current and predicted states and impacts to the Earth's life support system.

Session 1: The Changing Oceans

Climate change involves major changes in the oceans, including changes in ocean circulation and dynamic sea surface topography, a changing role in the global climate system, sea level rise, and a potentially ice-free Arctic ocean. It is important to understand the current changes and their potential future developments and impacts on the Earth's life-support system from local to global scales.

In this session, keynote speakers will present pressures on the ocean that are driving global change.

Session 2: Threats from Pollution, Warming and Acidification

Marine ecosystems are exposed to pollution, warming of the oceans, and an increasing acidification, which may affect their productivity and overall health adversely. The current and future impacts of these threats on the marine biosphere and beyond, including the impacts on human societies need to be understood, monitored, and ways to limit the threats and impacts need to be developed.

In this session, keynote speakers will address the current status and future impacts of pollution, warming and acidification on the marine biosphere and human societies.

Session 3: Processes and Life at the Interfaces with the Oceans

The oceans are integrated in the global system of systems with many interdependencies between them and the land and the atmosphere. There are many potential cascading effects, leading from disturbances and changes in one system to large impacts in the other systems. Therefore, understanding the processes on the interfaces between oceans, land and atmosphere is crucial in order to take interdependencies into consideration and avoid as far as possible cascading effects.

In this session, keynote speakers will highlight and help us to understand some of the stressors that are impacting ecosystems at the bottom of the ocean, with a focus on corals, and also issues related to urbanizing coastal zone, showing the journey of carbon and nitrogen along its origins from river networks to coastal waters. It will help the

audience to think about impacts in the ocean and coastal zones, leading to discussions in Session 4 and sustainable use of ocean resources.

Session 4: Sustainable use of Ocean Resources

Human well-being depends on the global ocean. It provides a wide range of resources that deliver socio-economic, cultural and environmental benefits to humanity. Yet human use of ocean resources has the potential to threaten the natural ocean processes that support life on Earth.

Sustainable use of ocean resources requires us to think holistically. It requires new scientific knowledge and innovation, improved operational services, development of human capacity, and enhanced decision making across industry, government and society.

This session considers sustainable use of ocean resources from the perspective of a 'value chain'. Science, services, capacity building, and decision making will be discussed as a set of activities that need to be carried out in order to deliver 'value' by way of ocean resources, used sustainably. Emphasis will be given to the connections and interfaces between these activities that are crucial to success.

Days 2 and 3

The 2nd and 3rd days of the symposium will aim to identify and review user information needs related to the impacts on the oceans discussed on day 1, present examples of existing information services and identify the potential prototype and pilot projects to be implemented through the GEO Blue Planet Initiative.

Session 5: Services and Information for Healthy Ecosystems and Food Security

Marine and coastal ecosystems provide crucial services including producing approximately 50% of the Earth's oxygen, providing seafood resources, supporting tourism and protecting coastlines from natural hazards. Climate change, overfishing and pollution threaten the health of these ecosystems and food security. In order to properly manage and mitigate these threats, services and information to monitor and manage the health, productivity and sustainable development of marine and coastal ecosystems are required.

In this session, keynote speakers will address the role of Earth observation services and information in support of aquaculture, fisheries management and fisheries economics.

A facilitation discussion will explore the use of ocean observations, measurements and models for monitoring and managing aquaculture, fisheries and related ecosystems.

Session 6: Services and Information for Coastal Communities

According to estimates more than a billion people, most of them in Asia, live in low-lying coastal regions. Population density is significantly higher in coastal than in non-coastal areas and coastal migration is associated with global demographic changes. The majority of megacities are located in the coastal zone and particularly in large deltas. Furthermore, the emerging global discourse on Blue or Ocean Economy assures that the demand for coastal and marine resources will only increase. The transformative and permanent effect of coastal urbanisation is exacerbated by the impacts from ocean climate vectors, many associated with a changing climate.

This session will examine the earth observation (EO) services and information that are required by the communities that call the coast their home. How can the services and information provided by the earth observations assist communities to make better choices about where they live, what to expect in a changing coastal climate, and how to plan a future in which the resources on which they depend are sustainably managed?

A facilitated discussions will build on the context provided by four keynote speakers. They will set the scene by considering the pathways of sustainability for coastal communities, considering their exposure to ocean-climate

vectors. The evolution of the EO community towards trans-disciplinary engagement with end-users will also be highlighted through a focus on the provision of what is increasingly known as “climate services”. A case study from Barbados and Grenada will demonstrate the efforts required to derive actionable services and products from EO data and information.

Session 7: Services and Information for the Blue Economy

In its recent report on the ocean economy in 2030 the Organisation for Economic Cooperation and Development estimates that 2010 economic activities associated with the oceans amounted to some USD 1.5 trillion, or approximately 2.5% of world gross value added, with direct full-time employment in the ocean economy amounting to around 31 million jobs. The OECD report projects rapid growth in economic activity associated with the oceans, with ocean-based industries having the potential to outperform the growth of the global economy as a whole. The OECD projections suggest that between 2010 and 2030 economic activity in, on and around the oceans could more than double its contribution to global value added, reaching over USD 3 trillion per annum.

Ocean observations, measurements and forecasts play a key role in the delivery of this growing level of economic activity, helping to ensure that it is conducted safely, cost-effectively and without unacceptable impacts on the environment. Ocean data and information also plays an important and growing role in enhancing the prediction of weather delivering benefits far inland.

This session will set the scene for the likely future trajectory of ocean related economic activity. It explores how ocean observations, measurements and models can contribute to improved weather forecasts providing some examples of some of the ways in which ocean and weather data and information support economic activity and the protection of life and property.

A facilitated discussion will consider the impact of ocean observations and measurements on improved ocean and weather models, exploring the benefits that incremental improvements might deliver in the future.

Session 8: Services and Information for Maritime Awareness

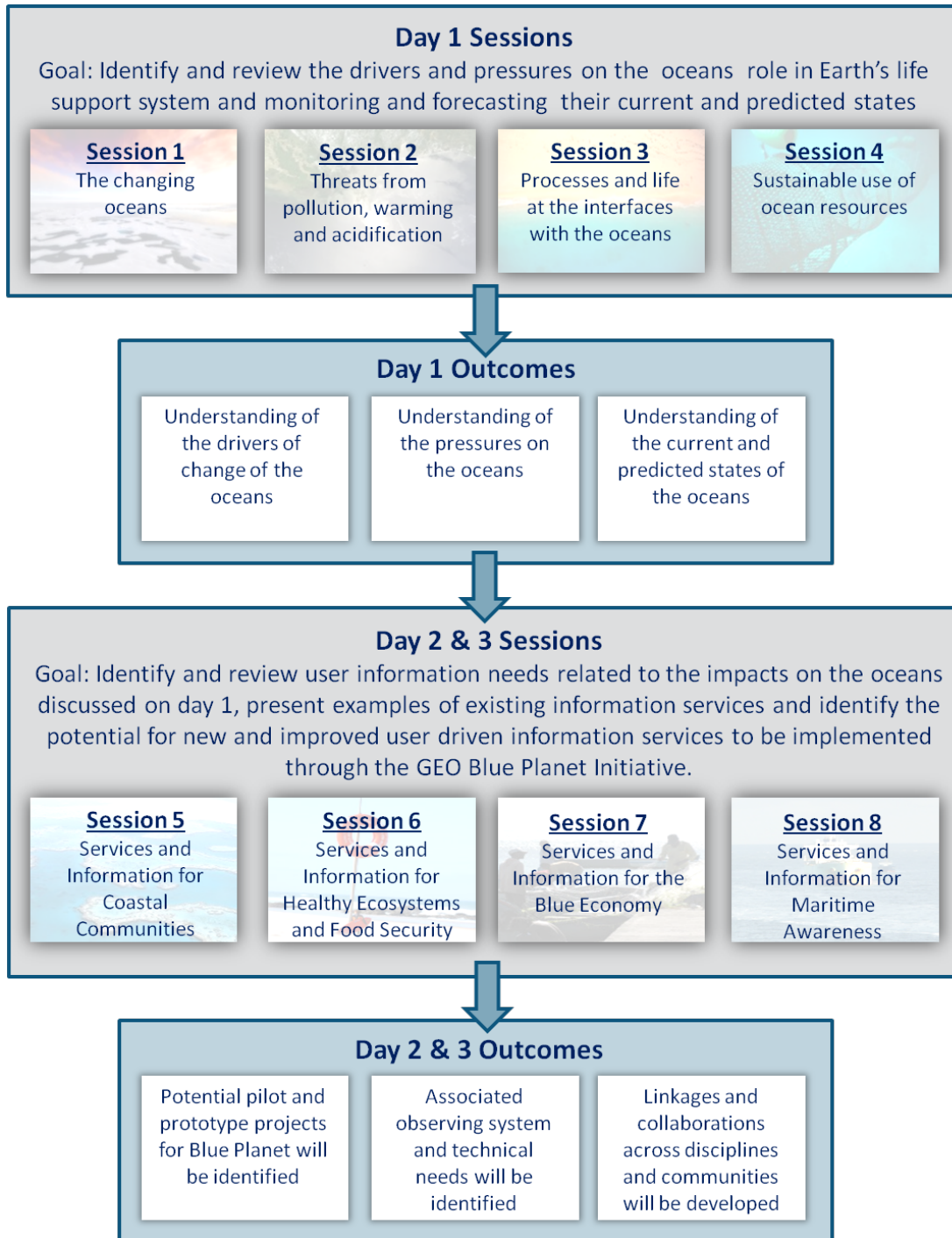
Our oceans have historically been instrumental in the transport of goods and people. Globalization has led to a constant increase in the global merchant fleet, whereby nowadays approximately 90% of the global trade is carried by sea. Industrial activities related to the exploitation of ocean resources are also on the rise. In addition the melting of the Polar caps due to climate change has opened up several new routes to commercial shipping, sea transportation, off-shore operations, and fisheries activities, making the timely information on sea ice essential for all types of marine operations in Polar Regions.

The fisheries sector is important as a source of food and employment and for government revenue, specifically for Small Island Development States (SIDS). This is enforced also by the Sustainable Development Goals targets which include an end to illegal, unregulated, and unreported (IUU) fishing, overfishing, and other destructive fishing practices (SDG 14.4). All of these factors call for the need to have a set of services for monitoring our oceans for environmental, safety and security purposes.

This session will focus on the requirements and service provision within the following two thematic areas: arctic maritime domain awareness and observations and monitoring of illegal, unreported and unregulated (IUU) fisheries activities.

A facilitated discussion will consider how the Earth observation data and technology can be used to develop information services to support policy, societal needs and sustainable development as related to Maritime activities.

Session Anticipated Outcomes





Post-Symposium Activities

Symposium Report: A high level report intended to gain awareness of Blue Planet activities by high-level representatives and governments and intergovernmental agencies will be produced in the months following the Symposium.

Working Groups and Project Selection: Following the Symposium, Blue Planet will put out a call to symposium participants and members of the broader community to join Blue Planet working groups. Working groups will be tasked with submitting proposals for specific prototype/pilot projects to Blue Planet's Steering Committee by early 2018. The Steering Committee will then select projects and begin resource mobilization for selected projects.

Matchmaking & Networking: Following the Symposium, Blue Planet will work to identify potential partnerships and activities at local and regional levels based on Symposium participation and community inputs.

2018 Symposium: In 2018, Blue Planet will host a working Symposium aimed at developing the projects selected by the Steering Committee. The 2018 Symposium will also aim to support the information needs for the OceanObs 2019 conference.

Day 1: Wednesday, May 31, 2017

07:40 – 08:30 Registration		
Welcome and Introductory Keynotes		
08:30 – 08:35	Welcome and Opening Comments	Paul DiGiacomo, National Oceanic and Atmospheric Administration
08:35 – 08:40	Welcome from the University of Maryland	James Carton, University of Maryland, College Park
08:40 – 09:00	Remarks by NOAA's Assistant Administrator for Oceanic and Atmospheric Research	Craig McLean, National Oceanic and Atmospheric Administration
09:00 – 09:15	The Group on Earth Observations	Douglas Cripe, GEO Secretariat
09:15 – 09:30	The Group on Earth Observations "Oceans and Society: Blue Planet" Initiative	Sophie Seeyave, Partnership for the Observation of the Global Oceans
Session 1: The Changing Oceans		
Session Co-chairs: Sinead Farrell, University of Maryland & Eric Lindstrom, National Aeronautics and Space Administration		
09:30 – 09:35	Opening Comments and Speaker Introductions	Sinead Farrell, University of Maryland Eric Lindstrom, National Aeronautics and Space Administration
09:35 – 09:45	Observing the Changing Ocean	David Legler, National Oceanic and Atmospheric Administration
09:45 – 10:05	Understanding Sea Level Change on Global and Local Scales	Benjamin Hamlington, Old Dominion University
10:05 – 10:25	The Changing Cryosphere and Impact on Regional Sea Level	Isabella Velicogna, University of California, Irvine
10:25 – 10:45	Arctic Ocean Dynamics and Links to the Global Oceans	Mary-Louise Timmermans, Yale University
10:45 – 11:00 Coffee Break		
11:00 – 11:30	Panel Discussion	
Session 2: Threats from Pollution, Warming and Acidification		
Session Co-Chairs: Jan Newton, University of Washington & Emily Smail, University of Maryland		
11:30 – 11:40	Opening Comments and Speaker Introductions	Jan Newton, University of Washington Emily Smail, University of Maryland
11:40 – 11:55	Marine Pollution: Status, Trends and Opportunities	Christopher Corbin, UN Environment Caribbean Environment Programme
11:55 – 12:10	Marine Pollution and the Toxic Legacy of Our Consumer Culture	Susan Shaw, Marine & Environmental Research Institute
12:10 – 12:25	Ocean Warming and Acidification: Present Conditions and Future Projections	Richard Feely, National Oceanic and Atmospheric Administration

12:25 - 12:40	Societal Impacts of Ocean Acidification and Warming	Jan Newton, University of Washington
12:40 - 13:10	Panel Discussion	
13:10 – 14:10	Lunch and Lunchtime Presentation	
13:40 – 14:10	The Open Data Cube and Coastal Applications	Jonathan Ross, Geosciences Australia
Session 3: Processes and Life at the Interfaces with the Oceans		
Session Co-Chairs: Katja Fennel, Dalhousie University; Nico Caltabiano, Climate and Ocean - Variability, Predictability, and Change & Anton Post, Florida Atlantic University - Harbor Branch Oceanographic Institute		
14:10 – 14:20	Opening Comments and Speaker Introductions	Anton Post, Florida Atlantic University - Harbor Branch Oceanographic Institute
14:20 – 14:50	Corals and Climate Change: A Shifting Landscape of Risk	Kim Cobb, Georgia Tech
14:50 – 15:20	Tracking Carbon and Nitrogen Pollution from Headwaters to Coasts	Sujay Kaushal, University of Maryland, College Park
15:20 – 15:50	Panel Discussion	
Session 4: Sustainable use of Ocean Resources		
Session Co-chairs: Gabrielle Canonico, National Oceanic and Atmospheric Administration & Tim Moltmann, University of Tasmania		
15:50 – 16:00	Opening Comments and Speaker Introductions	
16:00 – 16:15	COVERAGE: CEOS Ocean Variables Enabling Research and Applications	Eric Lindstrom, National Aeronautics and Space Administration
16:15 – 16:30	The Copernicus Marine Environment Monitoring Service: Its Use for Marine Resource Applications	Pierre-Yves Le Traon, Ifremer and Mercator Ocean
16:30 – 16:45	The Marine Biodiversity Observation Network (MBON): A Global Partnership for the Systematic Study of Life in the Sea	Frank Muller-Karger, University of South Florida
16:45 – 17:00	Incentivizing Sustainable Fisheries Management on a Global Scale: The Role of Markets and Science	Werner Kiene, Marine Stewardship Council
17:00 – 17:30	Panel Discussion	
18:00 – 19:30	Poster Session	

Day 2: Thursday, June 1, 2017

08:00 – 08:40 Registration		
Introductory Keynote		
08:40 – 09:00	Remarks from the World Bank on Marine Management Programs	Christoph Aubrecht, World Bank
Session 5: Services and Information for Healthy Ecosystems and Food Security		
Session Co-Chairs: Kwame Adu Agyekum, University of Ghana & Andy Steven, Commonwealth Scientific and Industrial Research Organisation		
09:00 – 09:10	Opening Comments and Speaker Introductions	Andy Steven, Commonwealth Scientific and Industrial Research Organisation
09:10 – 09:30	Advancing Aquaculture in a Changing World	Megan Davis, Florida Atlantic University - Harbor Branch Oceanographic Institute
09:30 – 09:50	The use of Earth Observation Data for Decision Support and the Management of Fisheries Resources in West Africa	Kwame Adu Agyekum, University of Ghana
09:50 – 10:10	The Economic Benefits and Impacts of Sustaining the Global Ocean	Rashid Sumaila, University of British Columbia
10:10 – 10:30 Coffee Break		
10:30 – 12:30	Facilitated Discussion	
12:30 – 13:30 Lunch and Lunchtime Presentation		
13:00 – 13:30	Global Ecological Marine Units (EMUs): An Environmental Stratification of the Ocean	Roger Sayer, United States Geological Survey
Session 6: Services and Information for Coastal Communities		
Session Co-Chairs: Louis Celliers, Council for Scientific & Industrial Research & J. Ru Morrison, Northeastern Regional Association of Coastal Ocean Observing Systems		
13:30 – 13:40	Opening Comments and Speaker Introductions	Louis Cellier, Council for Scientific & Industrial Research, South Africa J. Ru Morrison, Northeastern Regional Association of Coastal Ocean Observing Systems
13:40 – 13:55	Earth Observation Data and Information for Mitigation of Vulnerability to Climatic Hazards of Coastal Areas	Chide Ibe, University of Port Harcourt
13:55 – 14:10	Building a Futures assessment process to identify pathways to sustainability for coastal communities	Martin Le Tissier, Future Earth Coasts
14:10 – 14:25	Marine Monitoring for Evidence-based Action in Two Small Island Developing States: Barbados and Grenada	Kristin Qui, Yale University

14:25 – 14:40	Climate Services as a Model for Deriving Value from Earth Observation for Coastal Management	Maria Manez Cost, Climate Service Center Germany
14:40 – 15:00	Coffee Break	
15:00 – 17:00	Facilitated Discussion	
17:00 – 17:45	Review of Status, Priorities, Potential Projects and Partnership Opportunities	

Day 3: Friday, June 2, 2017

08:00 – 08:40 Registration		
Session 7: Services and Information for the Blue Economy		
Session Co-chairs: Ralph Rayner, National Oceanic and Atmospheric Administration & Pierre-Yves La Traon, Mercator Océan, France		
08:30 – 08:40	Opening Comments and Speaker Introductions	Ralph Rayner, National Oceanic and Atmospheric Administration
08:40 – 09:00	The Ocean Economy in 2030	Claire Jolly, Organisation for Economic Co-operation and Development
09:00 – 09:20	Ocean Observations and Models and Their Impact Upon Ocean and Weather Services	John Siddorn, Met Office
09:20 – 09:40	Coastal Ocean Observations, Risk Modeling and Reinsurance	Dail Rowe, WeatherPredict Consulting Inc.
09:40 – 10:00	The Impact of Ocean Observations on Wind and Wave Models for Application in the Offshore Industry	Andrew Cox, Oceanweather Inc.
10:00 – 10:20	Q & A	
10:20 – 10:40 Coffee Break		
10:40 – 12:00	Facilitated Discussion	
12:00 – 13:00 Lunch and Lunchtime Presentation		
12:30 – 13:00	Earth Observation Processing and Analytics Services	Lauryn Gutowski, EOS Data Analytics, Inc.
Session 8: Services and Information for Maritime Awareness		
Session Co-Chairs: Samy Djavidnia, European Maritime Safety Agency & Paul DiGiacomo, National Oceanic and Atmospheric Administration		
13:00 – 13:10	Opening Comments and Speaker Introductions	Samy Djavidnia, European Maritime Safety Agency
13:10 – 13:25	Domain Awareness at High Latitudes	Ruth Lane, National Ice Center
13:25 – 13:40	Collaborative Arctic Observations	Vera Metcalf, Eskimo Walrus Commission
13:40 - 13:55	Use of Satellite Data and Information for Monitoring Illegal, Unreported, and Unregulated Fishing Activities	Mark Richardson, The Pew Charitable Trusts
13:55 - 14:10	Reinforcing and Moving Beyond Pacific SIDS Monitoring of Illegal, Unreported and Unregulated Fisheries Activities	James Movick, Pacific Islands Forum Fisheries Agency
14:10 - 14:30 Coffee Break		
14:30 – 16:30	Facilitated Discussion	
16:30 – 17:15	Review of Status, Priorities, Potential Projects and Partnership Opportunities	
17:15 – 17:30	Wrap up and Next Steps	

