Linking Ocean and Coastal Information with Society

The GEO Blue Planet Initiative
Intergovernmental partnership working to improve the

- Availability
- Access
- Use

of Earth observations for the benefit of society:

GEO envisions a future where decisions and actions are informed by coordinated, comprehensive and sustained Earth observations.
Group on Earth Observations Priorities

- Biodiversity and Ecosystem Sustainability
- Disaster Resilience
- Energy and Mineral Resource Management
- Food Security and Sustainable Agriculture
- Public Health Surveillance
- Infrastructure and Transport Management
- Sustainable Urban Development
- Water Resources Management
# The GEO Work Programme

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Develop and implement services in response to policy mandate

Transition research to products and services, community building and capacity development
The Blue Planet Initiative

Sustained development and use of ocean and coastal observations for the benefit of society

GEO Blue Planet is a network of:

- Ocean and coastal scientists
- Social scientists
- End user representatives from stakeholder groups

The Blue Planet Initiative Objectives:

- processing of data into information
- linking this information with societal needs in line with the GEO engagement priorities

2020-2022 Blue Planet work plan:

- support GEO engagement priorities
- strengthen its linkages with stakeholders
- forge decision-support tools
The Blue Planet Initiative

Sustained development and use of ocean and coastal observations for the benefit of society
The Blue Planet Initiative

Sustained development and use of ocean and coastal observations for the benefit of society

In 2021, Blue Planet actively coordinates 7 thematic WGs
The Blue Planet Initiative

Sustained development and use of ocean and coastal observations for the benefit of society

In 2021, Blue Planet actively coordinates 7 thematic WGs operating Core Actions

Core Actions:
- Information Hubs
- Indicators Development
- Best Practices White Papers
- Stakeholder Needs Reporting

Thematic Working Groups:
- Fisheries WG
- Coast Flooding WG
- Marine Litter WG
- Eutrophication WG
- Water-borne Diseases WG
- Sargassum WG
- Oil Spill WG
The Blue Planet Initiative

Sustained development and use of ocean and coastal observations for the benefit of society

In 2021, Blue Planet actively coordinates 7 thematic WGs operating Core Actions supported by cross-cutting Activities.

THEMATIC WORKING GROUPS

- Fisheries WG
- Coast Flooding WG
- Marine Litter WG
- Eutrophication WG
- Water-borne Diseases WG
- Sargassum WG
- Oil Spill WG

CORE ACTIONS

- Information Hubs
- Indicators Development
- Best Practices White Papers
- Stakeholder Needs Reporting
- Coordination with GEO
- Networking
- Capacity building
- Stakeholder Engagement

CROSS-CUTTING ACTIVITIES

Linking Ocean and Coastal Information with Society
## The Blue Planet Initiative

### Its Operating Structure:

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<th>Steering Committee</th>
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<td><img src="image1" alt="Working Groups" /></td>
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- **Coordinate, support and manage activities**
- **Promote GEO Blue Planet activities and foster stakeholder engagement**

- **Provide Support**
- **Review Progress**

- **Provide Guidance**
- **Identify opportunities**

- **SC co-chairs and Shareholders**

- At most 35 members (currently going through renewal)

- **Provide strategic orientation**
- **Resource Mobilization**

For more information on our activities and governance, visit [https://geoblueplanet.org/](https://geoblueplanet.org/)
What does GEO Blue Planet Do?

Present core functions:

• Transforming Knowledge into Information

• Providing indicators to answer user needs

• Delivering scientific reviews and best practices

• Linking stakeholder with experts
What does GEO Blue Planet Do?

Present core functions:

• Transforming Knowledge into Information: Sargassum WG

• Providing indicators to answer user needs: Eutrophication WG

• Delivering scientific reviews and best practices: Marine Litter WG

• Linking stakeholder with experts: Oil Spill WG
Transforming information into knowledge

Sargassum WG Activities

SARGASSUM INFORMATION HUB
Information about Sargassum in the Tropical Atlantic
Stakeholder engagement workshops
Problem identified

Sargassum: The seaweed deluge hitting Caribbean shores

By Philippa Fogarty
The Caribbean

© 6 August 2018

Caribbean swamped by seaweed that smells like rotten eggs

This year sargassum is again washing up on Caribbean shores
Kick-off workshop

Sargassum and Oil Spills Monitoring Pilot Project for the Caribbean and Adjacent Regions Workshop

México D.F., México / 2 – 4 May, 2018
User needs

- Integrated monitoring
- Best practices guide
- Networking
- Centralized access to information
SARGASSUM INFORMATION HUB
Information about Sargassum in the Tropical Atlantic
Pilot project

IN-SITU
- Database
- Dashboard
- Data collection app

MANAGEMENT
- Challenges
- Collaboration
- Best Practices

SCIENCE
- Growth
- Sources
- Use

SARGASSUM IMPACTS

REMOTE SENSING
- Alternative Floating Algae Index
- Maximum Chlorophyll Index
- MultiSpectral Instrument-Modified Floating Algae Index

FORECASTING
- Drift experiments
- Local inundation reports
- Basin-wide forecasting system
Providing indicators to answer user needs

Eutrophication WG Activities

Daily Chlorophyll-a values (left) and classified Algal bloom index values (right) offshore Southern California, United States
(Source: NOAA, GEO Blue Planet, UNEP, Esri).
SDG Indicator 14.1.1a

The challenge:
Countries vary in their capacity to collect data to report on SDGs indicators

Approach:
- Publishing 14.1 eutrophication indicators methodology for the Global Manual on Ocean Statistics
- Producing statistics for the global indicators for eutrophication to be included in the 2021 SDG Progress report
- Developing a dashboard based on satellite-derived chlorophyll-a products to identify eutrophication hot spots
- Further implementation to be facilitated by CEOS Coastal Observations, Applications, Services & Tools (COAST) Ad Hoc Team - to include AI/MI approaches

https://chlorophyll-esrioceans.hub.arcgis.com/
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https://chlorophyll-esrioceans.hub.arcgis.com/
Methodology

- Global low resolution data
  - Level 1: Global Data Products
    - National contribution to the Index of Coastal Eutrophication Potential
    - Chlorophyll-a deviations and anomalies
  - Level 2: Regional & National Data
    - Chlorophyll-a concentrations
    - National modelling of coastal eutrophication potential
    - In-situ concentration of nitrogen, phosphate, and silica
  - Level 3: Supplementary Data
    - Other indicators

Local high resolution
Statistics for formal SDG reporting
Hub site with dashboards and additional information

Chlorophyll
Global analysis and metrics

Methodology, processing and application development in support of Sustainable Development Goal 14.1

Collaborative project with

GEO, NOAA, UNEP, Esri

MONITORING FOR SDG INDICATOR 14.1.1: Coastal Eutrophication

Chlorophyll concentration

Algal bloom index
- low
- moderate
- high
- extreme

Daily Chlorophyll-a values (left) and classified Algal bloom index values (right) offshore Southern California, United States (Source: NOAA, GEO Blue Planet, UNEP, Esri).
Delivering scientific reviews and best practices

Marine Litter WG Activities
UN Environment request for review and best practices

Read the full UNEA 4 resolution

You can read the full UNEA 4 resolution on "Marine plastic debris and microplastics" in PDF

The United Nations Environment Assembly Resolution

4/6. Marine plastic litter and microplastics
A Global Platform for Monitoring Marine Litter and Informing Action

Draft version: 7 March 2020

Emily Smale, Jillian Campbell, Daniel Takaki, Hans-Peter Plag, René Garetto, Samy Djerridjia, José Mouuthino, Ghaeta El Senafi, Alessandra Giorgietti, Matteo Viriti, Maria Eugenia Mulinza, Jack, Kate Larkin, Dwayne J. Wright, Francois Gaeret, Konstantinos Topouzis, Stewart Bennett, Anne Brownell, Guido Dlouhepek, Limwood Pendleton, Lech Mupae Segato, Licorich Mla i Canalis, Morgan Simpson, Armando Marino, Imanol Zabaleta
A Global Platform for Monitoring Marine Litter and Informing Action

• Existing and developing monitoring technologies
• Existing marine litter databases and major published datasets
• SDG indicators and other types of indicators
• Monitoring the plastics value chain
• Existing and developing global platforms
• Pilot project: marine litter in a digital ecosystem for the environment
Question: Where does the marine plastic waste...  
...go once released into the ocean?  
...found on the coast come from?

Approach:  
- Particle seeding  
- High resolution global ocean circulation and wind data  
- Lagrangian analysis
Best Practices Workshops

Workshop on Marine Debris Indicators: What’s Next?

Workshop on Technologies for Observing and Monitoring Plastics in the Oceans
Linking stakeholders with experts

Oil Spill WG Activities
Oil Spill Information

User Needs

• Detection, monitoring and tracking of accidents and discharges

• Oil spill-related data (vessel traffic, locations of refineries and environmental sensitive areas, etc.)

• Capacity development in the region
Oil spill data sharing

- AmeriGEO is setting up an oil spill information toolkit for the region
Satellite analysis training

- NOAA Satellite Analysis Branch will provide training to Trinidad and Tobago’s Institute of Marine Affairs, Ministry of Energy and Energy Industries and Environmental Management Authority
Where is GEO Blue Planet heading?
GEO Blue Planet’s work is well-aligned with the Decade

United Nations Decade of Ocean Science for Sustainable Development (2021-2030) supports efforts to 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 first Call for Decade Actions, which solicited ideas programs, closed on 15 January 2021. Over 200 ideas were submitted in response to this first Call.

Examples of UN Decade Programmes Proposal relevant to GEO

- FORESEA (OceanPredict)
- DITTO (Digital Twin Ocean)
- Observation System Integration – GOOS
- CoastalPredict (GOOS & CoastPredict)
- Biomolecular Ocean Observing Network (BOON)
- OceanPractices (IOC OBPS)
- MarineLife 2030 (MBON)
Proposed GEO Blue Planet Approach for the Decade

Leverage GEO’s convening power and interdisciplinary work programme to organize and advance changes in Earth observation data