

Marine Ecosystems and the Growing Ocean Economy: *Challenges and Opportunities for Sustainable Development and Science*

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World Ocean Council

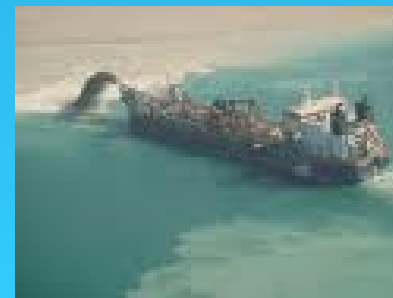
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The International Business Alliance
for Corporate Ocean Responsibility

**WOC 4th Sustainable Ocean Summit
Rotterdam, 30 Nov-2 Dec 2016**

The Multiple Use Ocean



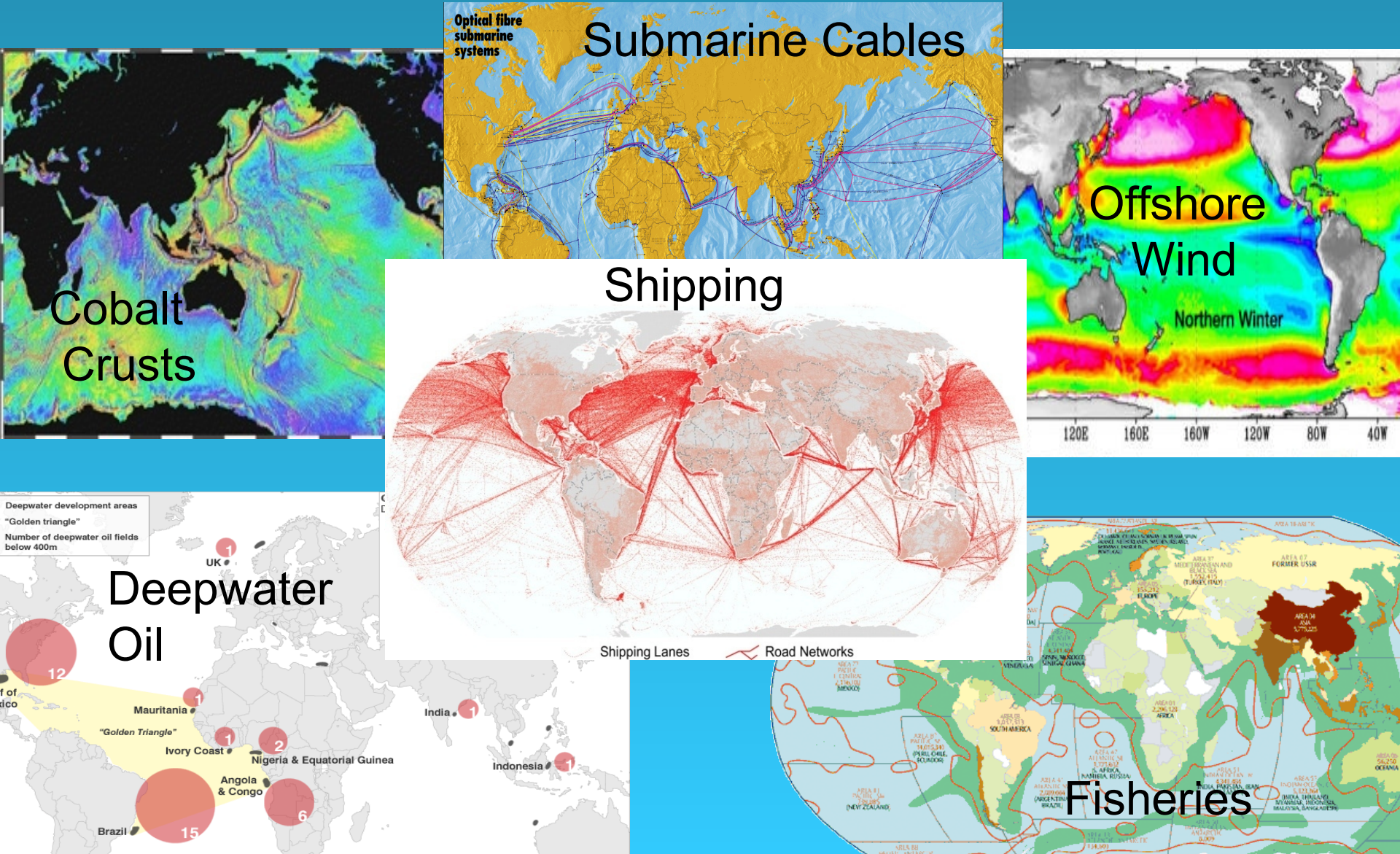
Growing Ocean Use

- Mariculture/Aquaculture
- Offshore oil and gas
- Shipping
- Mining / Seabed mining
- Fisheries
- Cruise and coastal tourism
- Dredging
- Submarine cables/pipelines
- Offshore wind energy
- Wave/tidal energy
- Ports/marinas
- Recreational boating/use
- Desalination
- Navy/military use
- Carbon sequestration

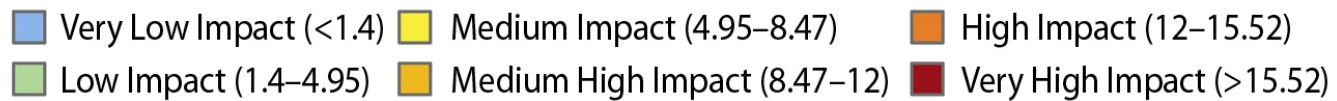
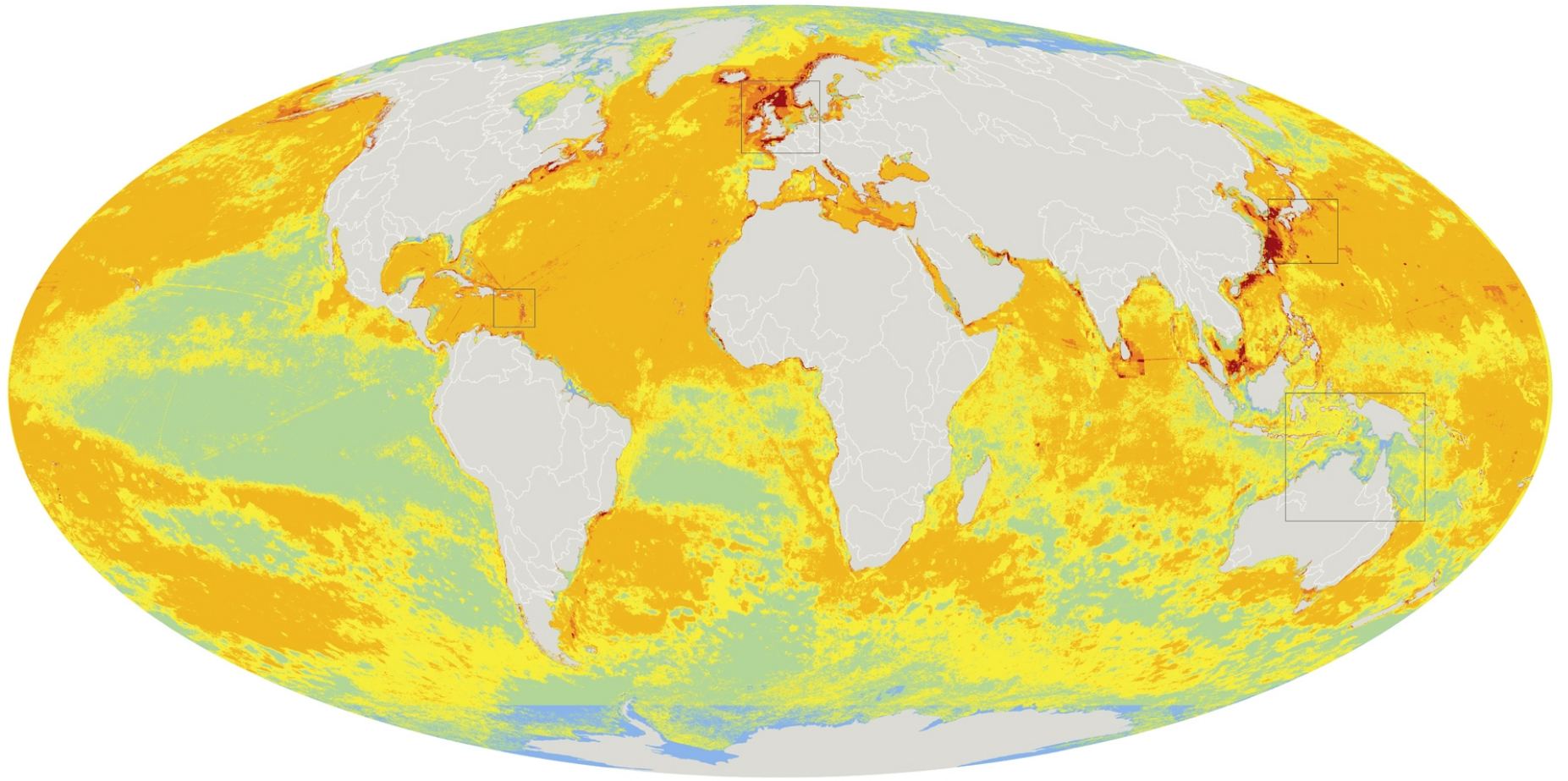
Expanding

- Kinds of use
- Levels of activity
 - Duration
 - Intensity
 - Frequency
- Location of activity
 - Geographical Extent
 - Frequency

Global Ocean Economic Activity



Ocean Ecosystem Impacts



The Ocean Business Community Challenge

- Ocean industries require access and social license to use ocean space and resources
- Many of the critical issues creating impacts and affecting access and social license are cross-cutting or cumulative
- Sustaining ocean health and productivity requires responsible use and stewardship by all users
- Best efforts by a single company, or an entire industry sector, are not enough to secure ocean health
- Ocean industries will benefit from collaboration with other sectors to create synergies and economies of scale to address impacts and ensure access and social license
- **Need structure/process for leadership and collaboration**



World Ocean Council



International, Cross-Sectoral Business Leadership Alliance

- Bringing ocean industries together, e.g. shipping, oil/gas, fisheries, aquaculture, tourism, offshore renewables, etc.
- Catalyzing private sector leadership and collaboration in
 - Advancing “*Corporate Ocean Responsibility*”
 - Communicating responsible ocean industry/economy
- 85+ members worldwide; 35,000+ in global network

Goal Healthy, productive global ocean and its sustainable use and stewardship by responsible *ocean business community*

Creating business value for responsible companies

- Access and social license for responsible ocean use
- Synergies and economies of scale in addressing issues
- Stability and predictability in ocean operations

World Ocean Council Members

3W Marine Pty Ltd	Green Sailing	Oldendorff Shipping
Almi Tankers S.A.	Guangxi Panshibao Co., Ltd	OLRAC SPS
A.P. Moller-Maersk A/S	Heerema Marine Contractors (HMC)	PanGeo Subsea
Arctia Shippng	Heidmar, Inc.	Planet OS (formerly Marinexplore)
Arctic Fibre	Holman Fenwick Willan LLP	Resolute Marine Energy
ASL Environmental Sciences	IHC Mining	RightShip
Baird Publications	Intl Ass'n of Geophysical Contractors	Rio Tinto
BigBlueStuff	Intl Chamber of Shipping (ICS)	Royal Greenland A/S
BHM Penlaw	Intl Tankers Owners Pollution Fed. (ITOPF)	Sanford Limited
Birds Eye – Igloo	JASCO Applied Sciences	Scottish Marine Institute - SAMS
Blank Rome	JS Capital Power	Shell
BP	Keppel Group	Shipping HK Forum Ltd
Cape Breton University	Keppel Offshore and Marine	Southall Env'tal Assoc (SEA)
Caris USA Inc.	L3 MariPro	Stena Bulk AB
Center for the Blue Economy	Liquid Robotics	SubCtech
CESI- Engineering & Environment Division	Lloyds Register	Tai Chong Cheang (TCC) Steamship Co HK
China Navigation Co. /Swire Pacific	Louisbourg Seafoods	Technip
Circumpolar Solutions	M3 Marine (Offshore Brokers) Pte Ltd	Terragon Environmental Technologies
Class NK	MF Shipping Group	Thordon Bearings Inc.
Coastal India Development Council	Marine Acoustics, Inc.	TierraMar Consulting
CSA Ocean Sciences Inc.	Marine Assets Corporation	Total Marine Solutions
Damen Shipyards Group	Memorial University – Marine Institute	Twin Dolphins
DNV – GL	Mitsubishi Heavy Industries	Univan
DHI	Nautilus Minerals, Inc.	University of Massachusetts Boston
ESRI	Noise Control Engineering LLC	Univ. Texas Marine Science Inst.
ExxonMobil	N America Marine Env't Protection Assn.	Vieira de Almeida & Associates (VdA)
FOB	Ocean Nourishment	Windward Ltd.
Golder Associates	OceanNetworks Canada	Zodiac Maritime

Ecosystems, Science, Business, Sustainability

1. Ocean Policy and Governance

- UNCLOS/BBNJ; Convention on Biological Diversity, etc.

2. Marine Spatial Planning / Ocean Zoning

3. Operational Environmental Issues

- Sound and Marine Life; Marine Mammal / Vessel Interactions
- Port Reception Facilities; Biofouling / Invasive Species

4. Regional Ocean Business Councils

- Arctic, Caribbean, W. Indian Ocean, SE Asia

5. Smart Ocean / Smart Industries

- Data from Industry Vessels/Platforms of Opportunity

6. Sea Level Rise / Extreme Weather Events

- Port/coastal infrastructure adaptation and resiliency

➤ **Sustainable Development Goals for the Ocean**

➤ **Ocean Investment Platform**

1. Ocean Policy and Governance

UN Convention on the Law of the Sea (UNCLOS)

- Negotiating new “Implementing Agreement” re environment in Areas Beyond National Jurisdiction
- Proposed EIA for commercial activities in ABNJ

Convention on Biological Diversity (CBD)

- Identifying Ecologically / Biologically Significant Areas (EBSAs) for management, esp for ABNJ
- EIA for marine areas, esp for ABNJ

UN Sustainable Development Goals for 2015-2030

- Ocean development goal and targets

WOC is usually the only industry presence in these inter-governmental negotiations affecting future of the ocean economic activity

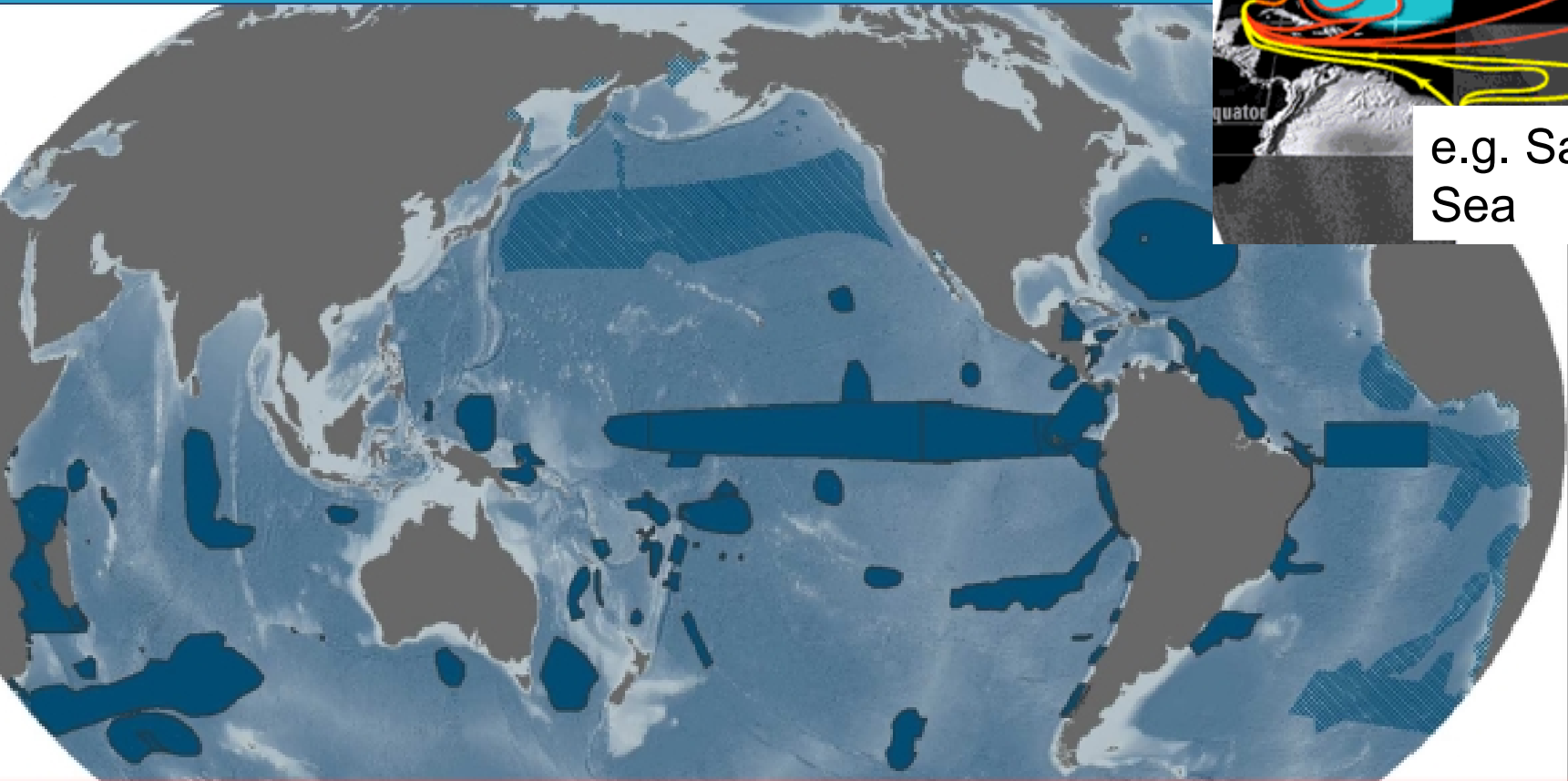
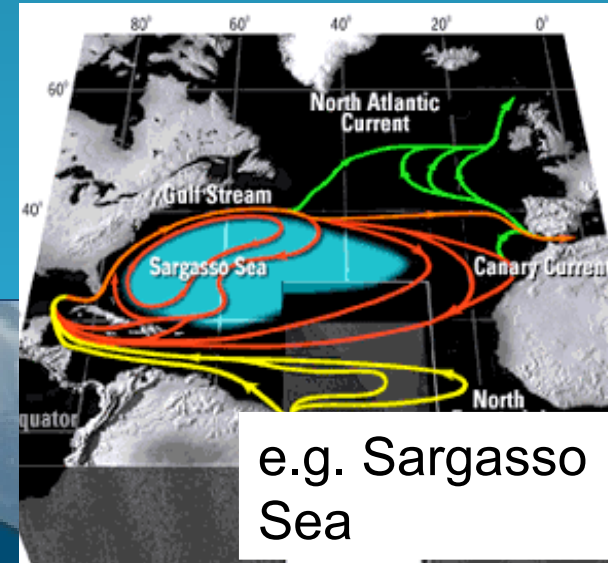
New International Instrument Under UNCLOS

UN General Assembly decided that **before the end of 2017:**

- Urgently address biodiversity conservation/sustainable use in Areas Beyond National Jurisdiction (ABNJ)
- **Develop a “binding implementing agreement” under UNCLOS to create requirements for:**
 - **Area-based management** tools, such as marine planning and marine protected areas
 - **Environmental impact assessment (EIA)** requirements
 - **The transfer of marine technology**
 - Managing marine genetic resources, including benefit-sharing
- Include consideration of:
 - Identification and selection of conservation measures for EBSAs
 - Regional identification of MPAs in ABNJ
 - Activity types to be regulate
 - Establishing enforcement measures

Ecologically / Biologically Significant Areas

Areas meeting CBD criteria for EBSAs and proposed for inclusion in EBSA register



Ocean Governance Happens: Sargasso Sea

“Hamilton Declaration on Collaboration for Conservation of the Sargasso Sea”

- Signed by Bermuda, UK, US, Monaco, Azores, 11 March 2014
- Establish Sargasso Sea Commission and Secretariat
- Develop proposals using best science, ecosystem approach and precautionary approach, including for:
 - **“Measures to control, minimize, and where possible, eliminate the adverse effects of international shipping”**
 - **“Measures to minimize... the adverse effects of fishing activities”**
 - **“Any other measures to maintain the health, productivity and resilience of the Sargasso Sea and to protect its components... from the adverse effects of anthropogenic activities”**



WOC Ocean Policy Program

Increase the level of informed, coordinated and proactive involvement of private sector in ocean governance and policy developments that impact business:

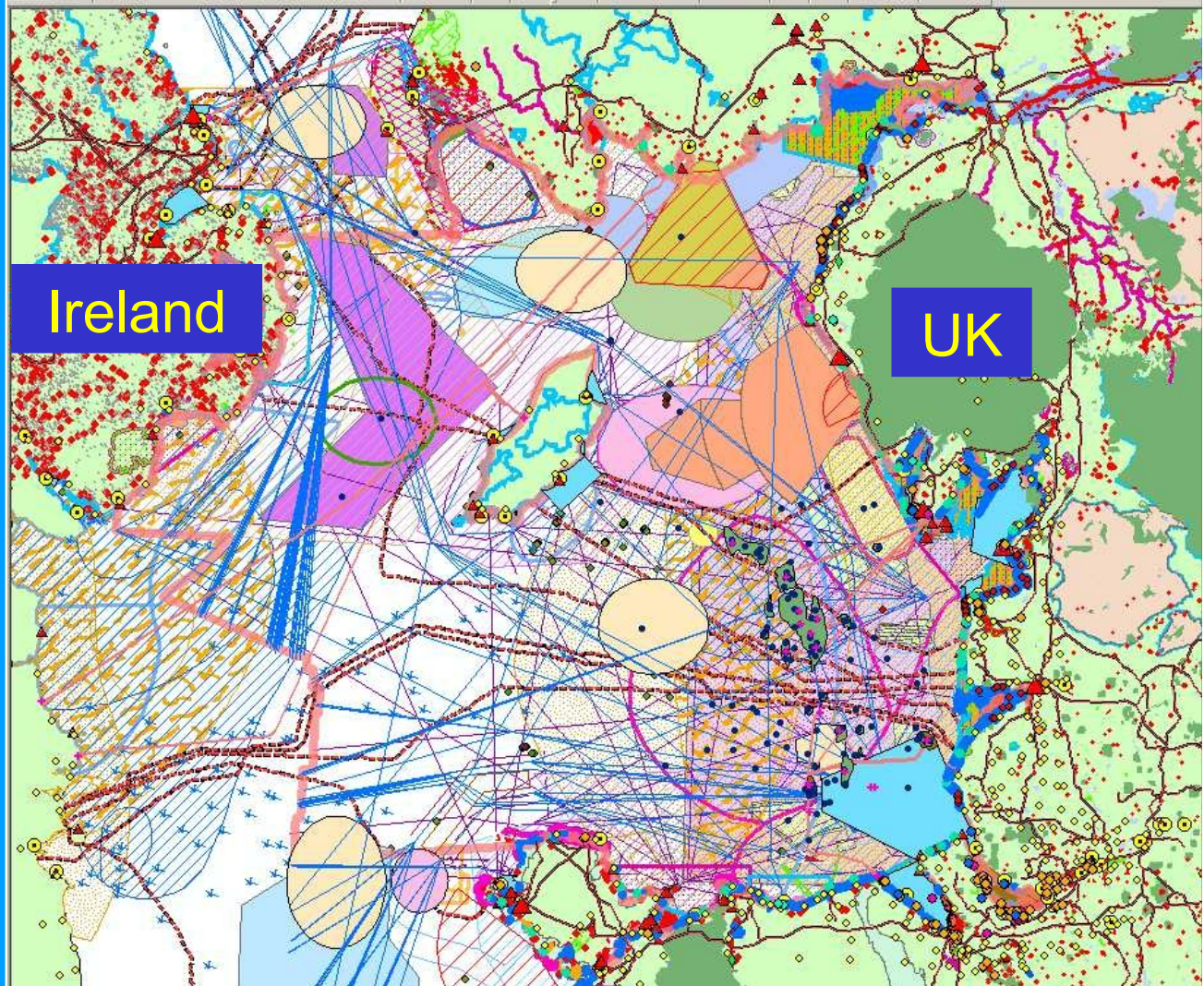
- Monitor, analyze and report on ocean policy developments
- Ensure industry input to key ocean policy events, e.g. UN
- Provide updates on ocean policy at key industry events
- First-ever *Business Forum on Ocean Policy and Planning* (New York, 29-30 Sept, 2014)
- First-ever *Ocean Policy Review and Analysis for Industry*:
http://www.oceancouncil.org/site/business_forum/index.php?page=report

2. Marine Spatial Planning / Ocean Zoning

- Ensure ocean business community is informed of ocean planning process and plans
- Examine how ocean planning has worked and review the role of industry
- Define and examine the potential business impacts and benefits of ocean planning
- Determine how industry can optimize potential ocean planning benefits and minimize the impacts
- Develop coordinated business community engagement in ocean planning
- Ensure that ocean planning takes into account the viability of responsible ocean economic activities

The Sea is Crowded with Many Uses

- Tourism
- Oil & gas
- Mariculture
- Coastal defence
- Ports & navigation
- Military activities
- Culture
- Conservation
- Submarine cables



- Dredging & disposal
- Renewable energy
- Marine recreation
- Mineral extraction
- Fishing

WOC Program on MSP

- Create a clear industry understanding about MSP
- Examine how MSP has worked and the role of industry
- Define and examine the potential business impacts and benefits of MSP
- Determine how industry can optimize potential MSP benefits and minimize the impacts
- Ensure the ocean business community is fully informed of MSP process and plans
- Develop a coordinated business community strategy and action plan for engaging in MSP
- Ensure MSP takes into account responsible ocean economic activities

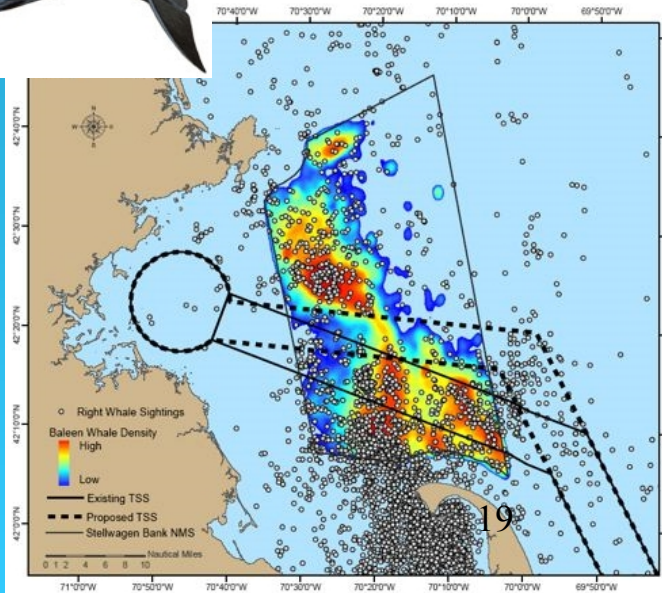
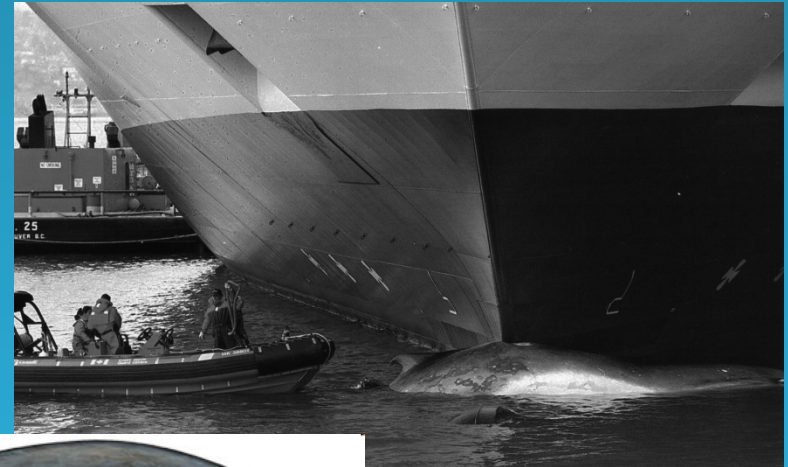
3. Operational Environmental Issues

- **Marine Waste and Debris/Water Quality**
 - Port Reception Facilities Platform
 - Solid waste/Plastics
- **Marine Invasive Species**
 - Biofouling Platform
- **Marine Sound**
 - Marine Sound Platform
- **Marine Mammal Interactions**
 - Ship strikes

Marine Mammal Interactions

Ship Strikes

- Marine mammal issues will increasingly affect marine activities, especially shipping
- Addressing ship strikes will lead to changes in logistics and operations



4. Regional Ocean Business Councils

Priority areas:

- Arctic, Mediterranean, Caribbean, W Indian Ocean, SE Asia
- Bringing together the range of marine industries in the region to create cross-sectoral business collaboration on sustainability, science and stewardship
- Priority issues in various regions include:
 - Collaborating with inter-governmental bodies
 - Reducing water pollution, protecting biodiversity
 - Preventing maritime accidents
 - Avoiding the introduction of invasive species
 - Reducing/cleaning up marine debris
 - Improving marine science and observations

5. Smart Ocean / Smart Industries

Ensure a wide range of industry vessels and platforms are:

- Providing routine, sustained, standardized information on the ocean and atmosphere
- Contributing to describing the status, trends and variability of oceanographic and atmospheric conditions
- Improving the understanding, modeling and forecasting of oceanic ecosystems, resources, weather, climate variability and climate change

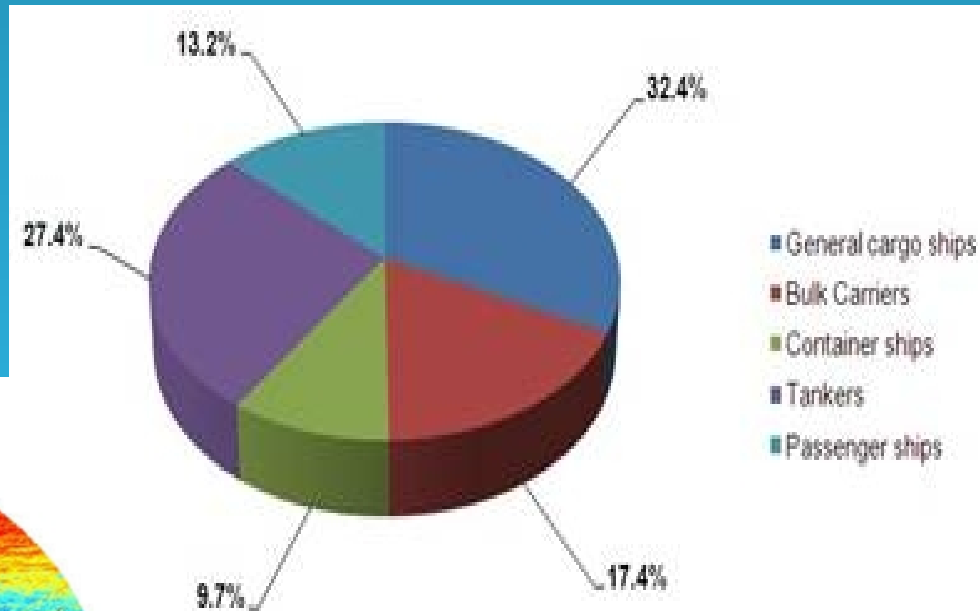
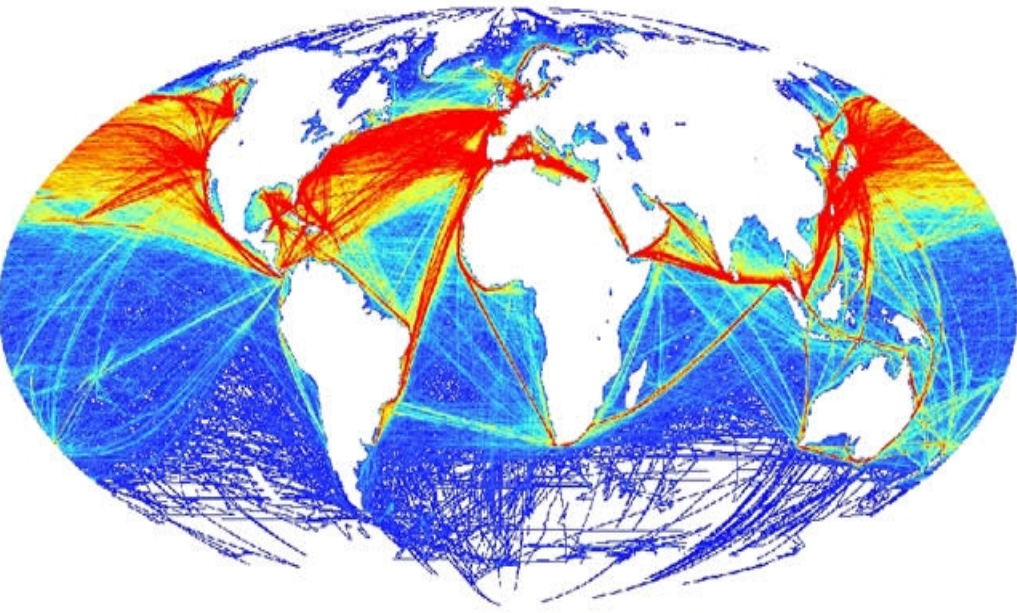
Establish a program to:

- Expand the number of vessels and platforms that collect standardized ocean, weather and climate data
- Improve the coordination and efficiency of data sharing and input to national/international systems
- Build on “ships/platforms of opportunity” programs

Opportunities of Ships

50,054 ships (Oct 2010)

- Tankers: 13,175
- Bulk Carriers: 8,687
- Container ships: 4,831
- Passenger ships: 6,597



Figures in brackets are numbers of ships, by sector.
Source: IHS Fairplay October 2010

Other Ship and Platform Opportunities

Oil and gas



Fisheries



Aquaculture



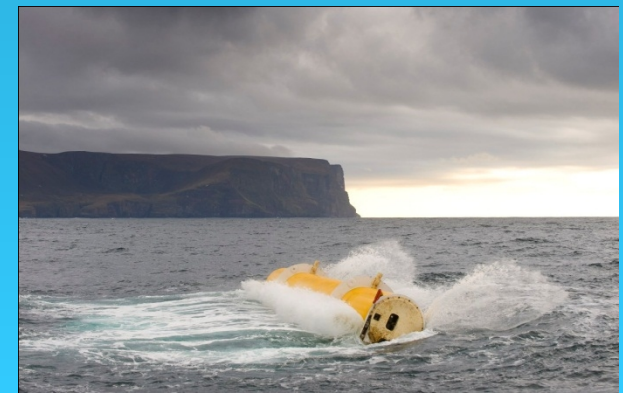
Offshore wind energy



Ferries



Wave/tidal energy



International Ship/Platform Data Collection

Comprehensive

- Incorporates needs and opportunities from different industries
- Addresses ocean, weather and climate data needs

Scaleable

- Within industries
- Across industries
- Upgradeable over time

Entry Options

- Retrofit – existing vessels and platforms
- Newbuild

Cost-Efficient

- Synergies – within and between industries
- Economies of scale

Smart Ocean-Smart Industries: How it works

WOC...

- Engages scientific institutions to identify:
 - Priority data collection needs and areas
 - Appropriate, cost-effective, ship-suitable technology
- Identifies and recruits companies:**
 - **With vessels/platforms operating in priority areas**
 - **Interested hosting instruments / sharing data**
- Instigates and facilitates working relationship between the company and the scientific institution
- Monitors, coordinates and supports interaction between company and scientific institution
- Ensures industry data collection efforts are efficient, cost effective and contribute to national and international public science programs

Smart Ocean/Smart Industries: Next Steps

- Develop joint Industry/Science Steering Committee
- Define value proposition/rationale for industry and science
- Inventory of existing ships/platforms of opportunity programs
- Define the “menu of options” for voluntary observations
- Define interface requirements for platforms / payload
- Develop the principles, practice and platform for industry data sharing and access
- **Develop pilot projects to put “Smart Industries” to work**
 - Regional, e.g. Mediterranean, Caribbean
 - Parameters, e.g. ocean pH, bathymetry
 - Extreme weather or ocean events, e.g. tsunamis

Sustainable Development Goals (SDGs)

1	End Poverty	End poverty in all of its forms everywhere
2	Achieve Food Security	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
6	Ensure Water and Sanitation for All	Ensure availability and sustainable management of water and sanitation for all
7	Ensure Access to Energy	Ensure access to affordable, reliable, sustainable, and modern energy for all
8	Promote Sustainable Economic Growth	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
9	Build Resilient Infrastructure	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
10	Reduce Inequality Among Countries	Reduce inequality within and among countries
11	Make Cities Sustainable	Make cities and human settlements inclusive, safe, resilient and sustainable
12	Ensure Sustainable Consumption and Production	Ensure sustainable consumption and production patterns
13	Combat Climate Change	Take urgent action to combat climate change and its impacts
14	OCEAN	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
15	Protect Terrestrial Ecosystems	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
16	Promote Peaceful Societies	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
17	Strengthen Means of Implementation	Strengthen the means of implementation and revitalize the global partnership for sustainable development

Specific Targets of the *Ocean SDG*

- Preventing and significantly reducing marine pollution of all kinds – by 2025.
- Sustainably managing and protecting marine and coastal ecosystems to avoid significant adverse impacts – by 2020.
- Conserving at least 10% of coastal and marine areas – by 2020.
- Minimizing and addressing the impacts of ocean acidification – no target date.

Specific Targets of the *Ocean SDG* - cont

- Restoring fish stocks by regulating harvesting, ending overfishing, illegal, unreported and unregulated (IUU) fishing and destructive fishing, and implementing science-based management – by 2020.
- Prohibiting certain fisheries subsidies which contribute to overcapacity and overfishing, eliminating subsidies that contribute to IUU fishing, and refraining from introducing new such subsidies – by 2020.
- Increasing the economic benefits to small island developing states and least developed countries from the sustainable use of marine resources – by 2030.

SDGs and the Ocean Economy

What do the SDGs and the *Ocean SDG* mean for the ocean business community ?

- For the ocean business community as a whole ?
 - Especially the broad, cross-cutting *Ocean SDG* goals: reducing pollution, avoiding ecosystem impacts, increasing protected areas ?
- How can ocean industries provide leadership and collaboration to ensure the SDGs for the ocean...
 - ...are practical and implementable ?
 - ...support responsible economic activity ?
 - ...advance development that can be sustained ?

How can governments, industry and other ocean stakeholders best collaborate on ocean sustainable development ?

WOC Ocean SDGs Initiative

Engage the ocean business community to develop SDG targets and indicators...

2015

- Inform ocean business community about SDGs (*ongoing*)
- Analyze SDGs re ocean industries (*report completed*)

2016

- **Develop draft targets and indicators with/for ocean business community (*underway*)**
- Engage/consult other stakeholders for input
 - Arctic SDG Targets for Business Workshop
 - *Arctic Business '16, Bode, 25-26 May*
 - Ocean SDG Targets for Business Workshop
 - *Sustainable Ocean Summit, Rotterdam, 30 Nov-2*

Dec

WOC Ocean Investment Platform

A structure and process to bring together:

- **Leadership companies** from major ocean use sectors, e.g. fishing, aquaculture, shipping, offshore energy, etc.
- **Enterprises** that provide the solutions - innovation, technology, products, services or information
- **Investors**

Ocean Investment Platform: Value

Value of a global cross sectoral platform...

- **Catalyse interaction** among ocean users, solution providers and investors.
- **Provide a common process** to identify, articulate and evaluation of ocean industry priorities for investment in sustainability solutions.
- **Facilitate synergies and economies of scale** among investors, innovation initiatives and challenge competitions to more effectively address ocean sustainable development needs and opportunities

Ocean Investment Platform: Function

The platform will serve as the place to...

- **Characterize the issues and challenges** of ocean sustainable development that are affecting major ocean users
- **Articulate the opportunities**, solutions and innovation
- **Identify the solution providers**
- **Elaborate and evaluate the investment opportunities**
- **Foster and facilitate investment community interaction** with the ocean users and the solution providers



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