

# Ocean Science to support Climate Change Adaption and Mitigation: IOC-UNESCO related activities

**UNFCCC SBSTA RD 10**  
**3 May 2018**



United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Oceanographic  
Commission

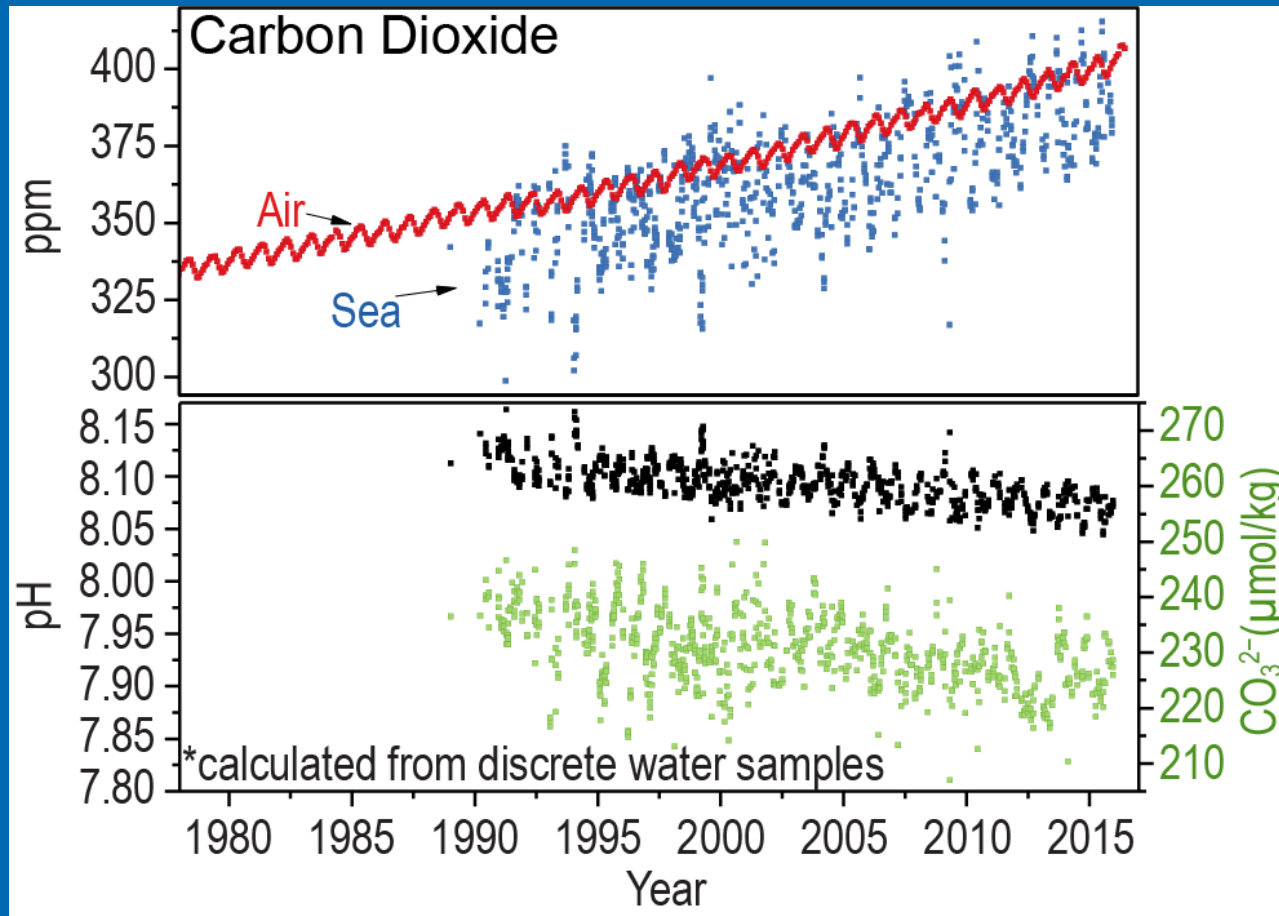


**Sustainable  
Development  
Goals**

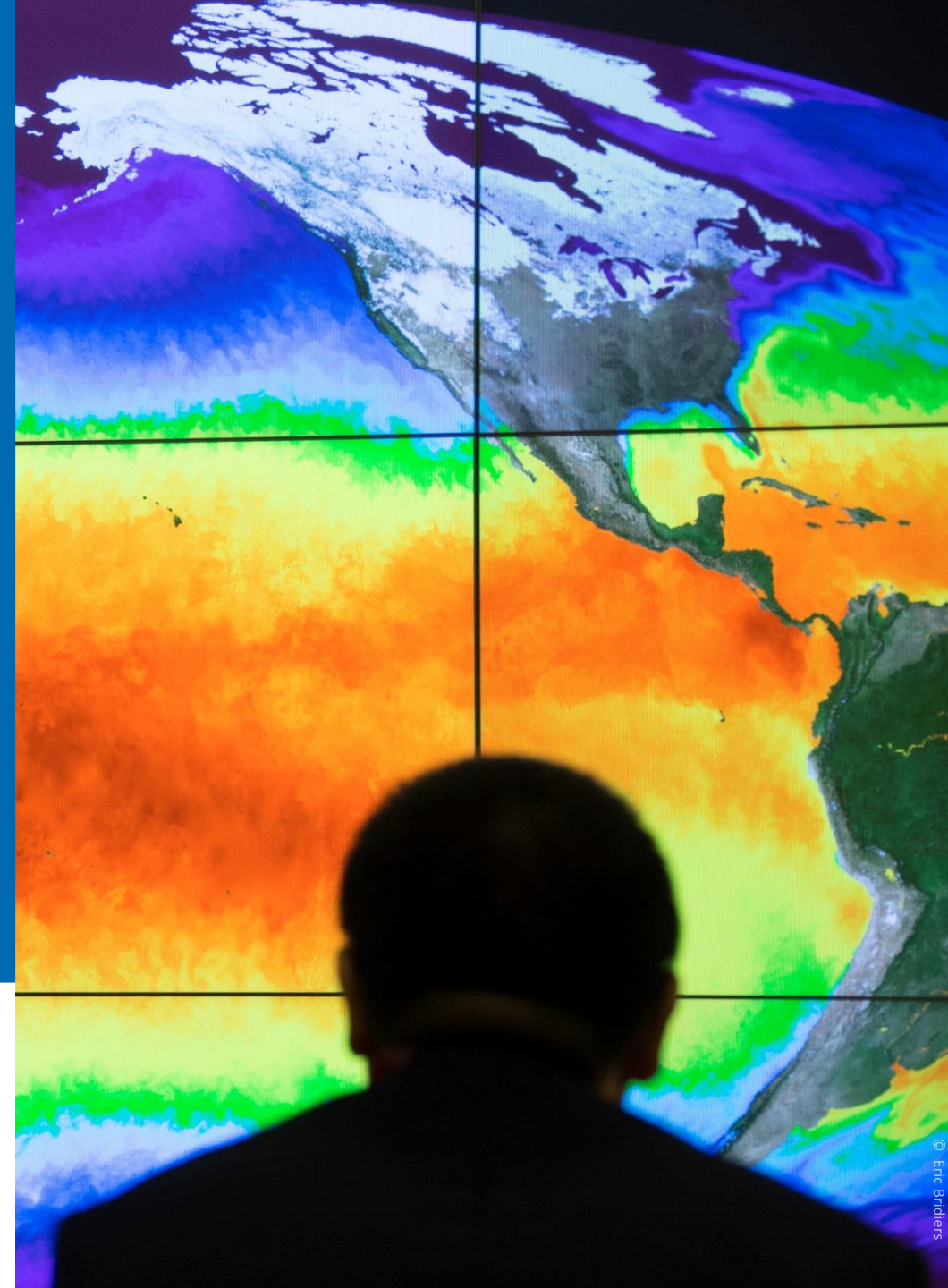




# On Ocean Acidification



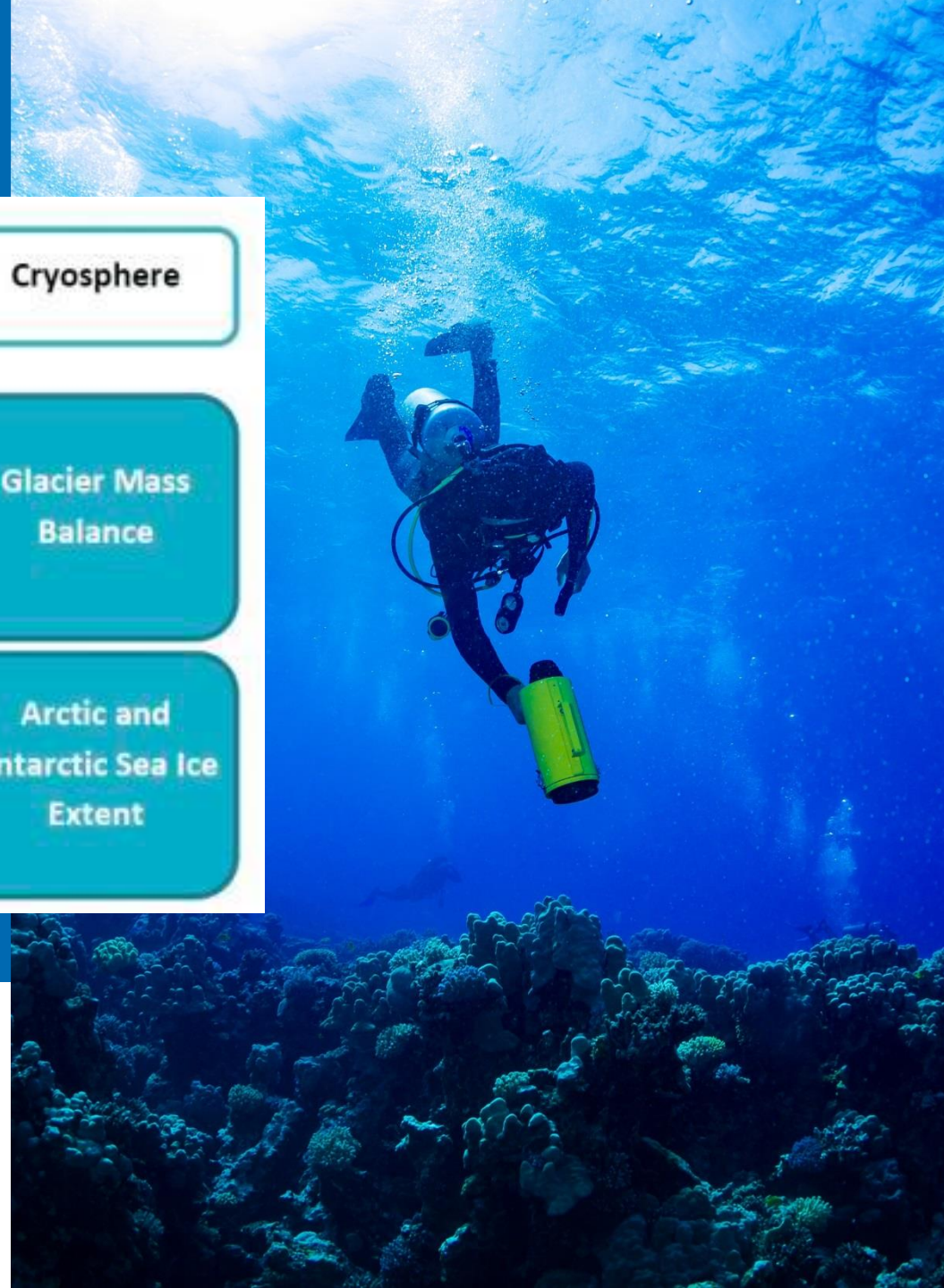
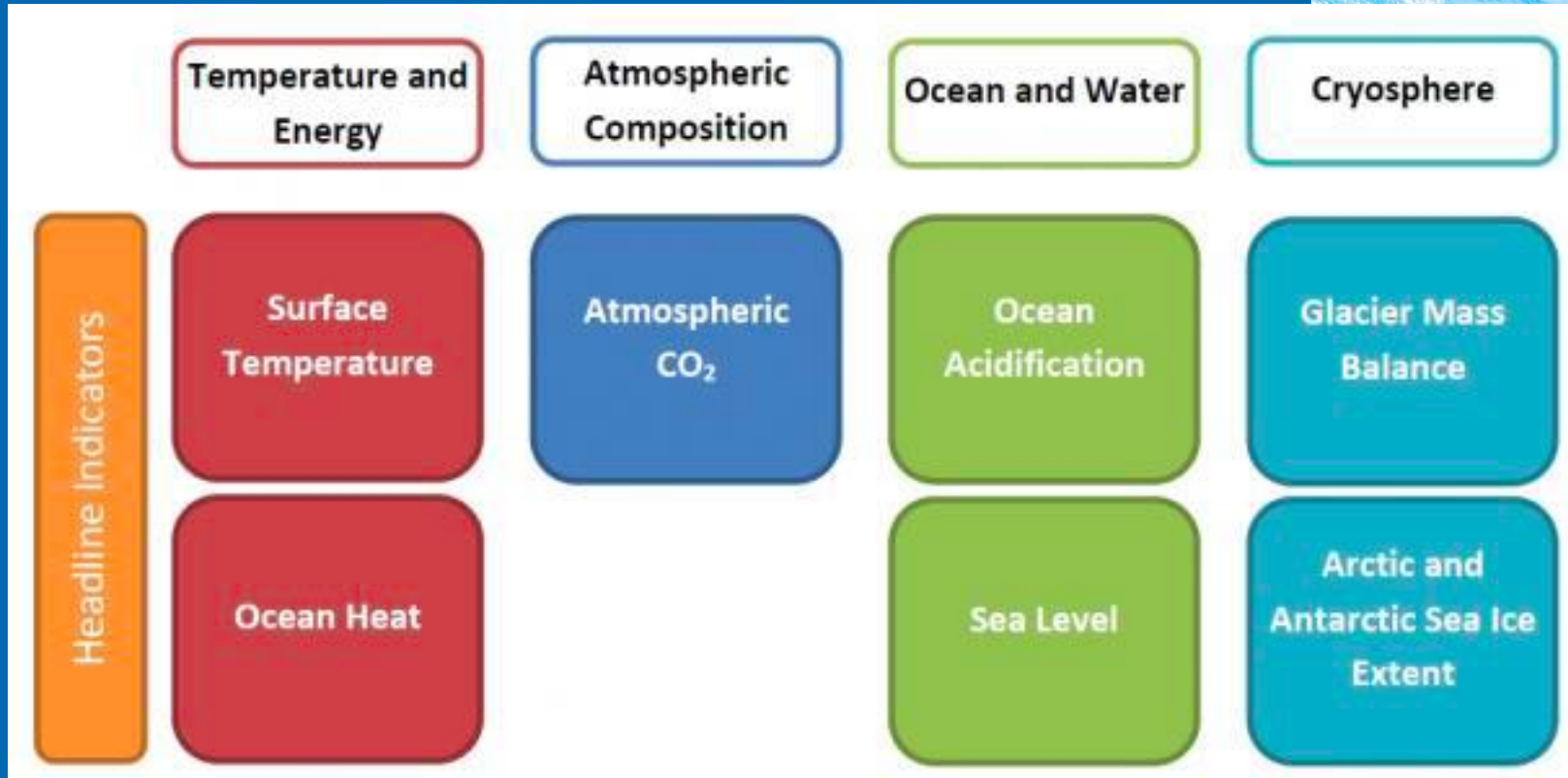
Trends in surface (< 50 m) ocean carbonate chemistry calculated from observations obtained at the Hawai'i Ocean Time-series (HOT) Program in the North Pacific over 1988–2015. ([Figure source: NOAA, Jewett and Romanou 2017](#) ).



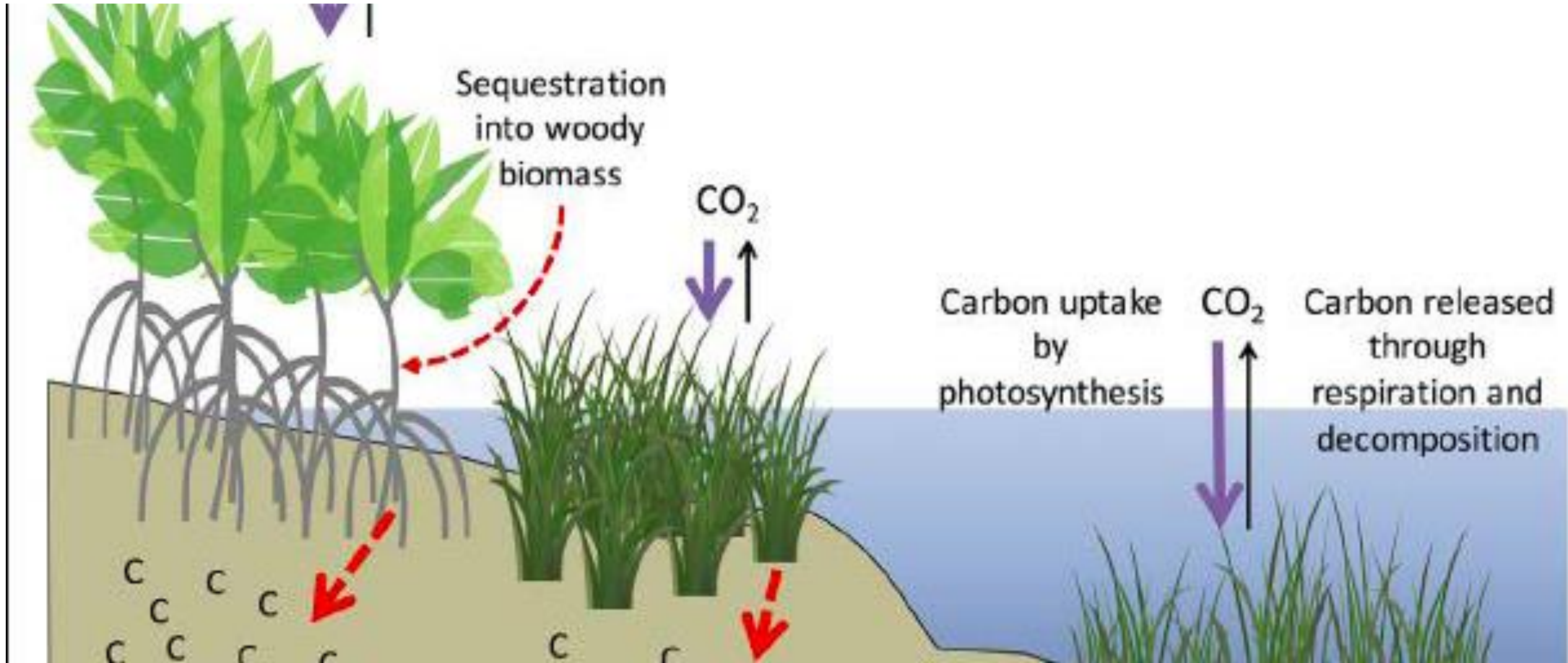


# Ocean observations for societal benefit

## Climate, services, ocean health



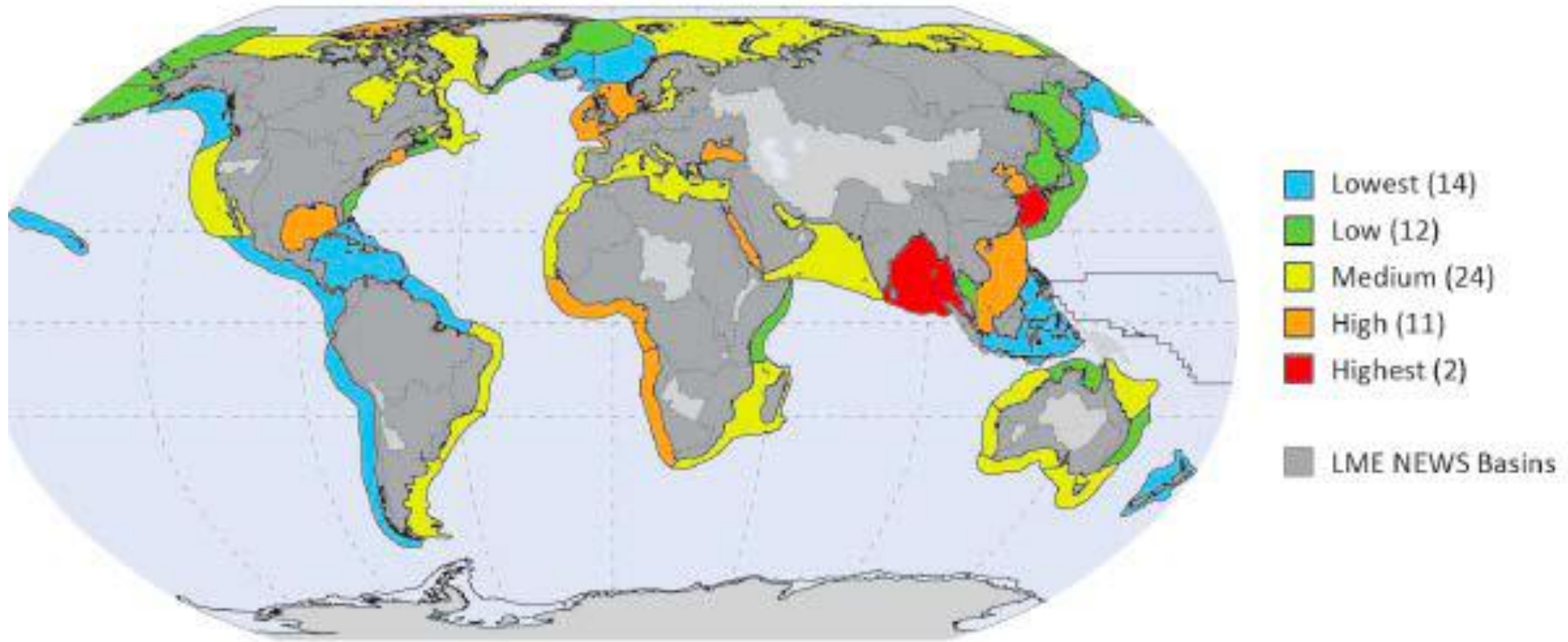
# Blue Carbon (and NDCs)



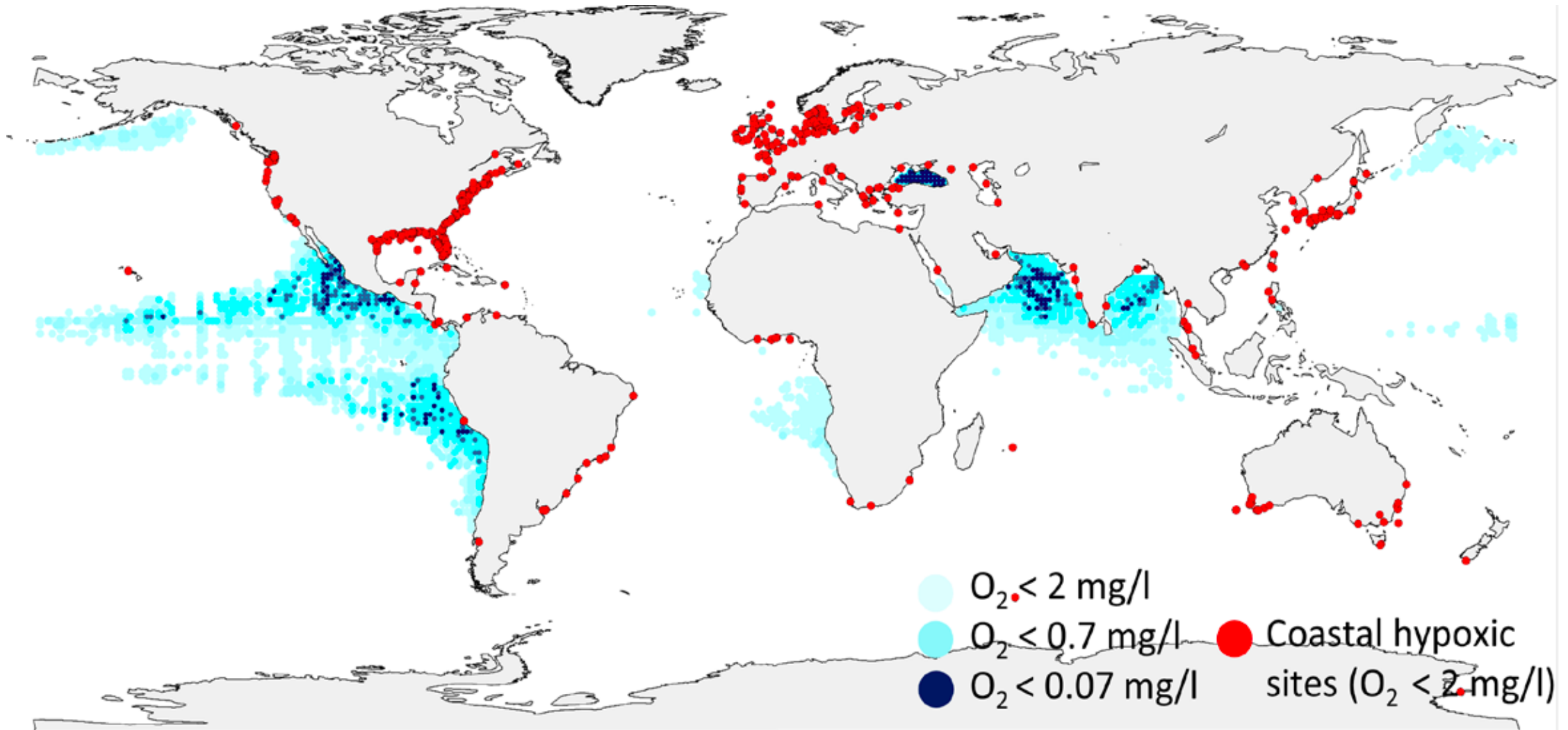


# Healthy ocean systems deliver benefits: Eutrophication and carbon storage?

b) For 2030



# Ocean de-oxygenation





# Modelling and Predictions

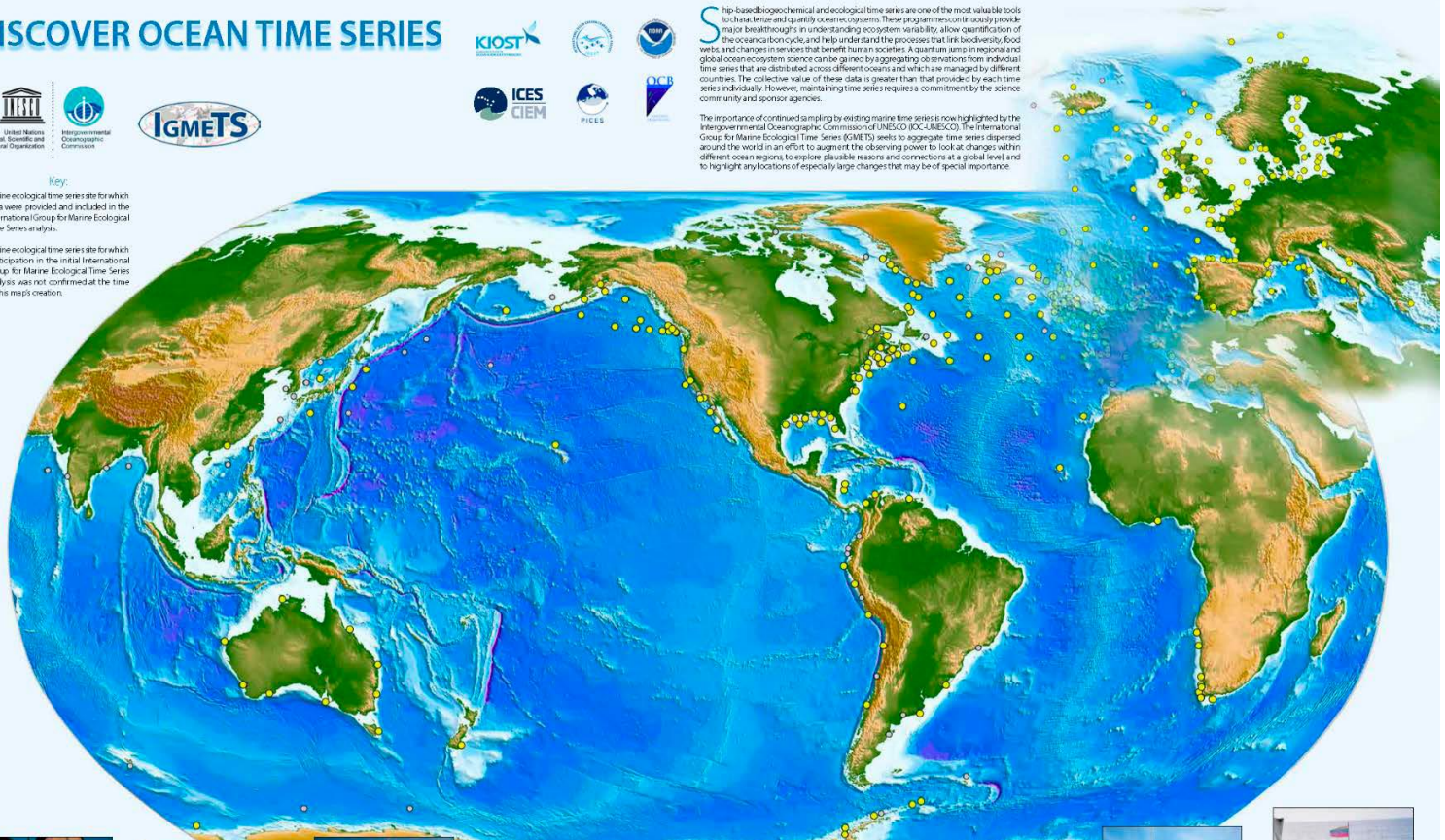
## DISCOVER OCEAN TIME SERIES



Ship-based biogeochemical and ecological time series are one of the most valuable tools to characterize and quantify ocean ecosystems. These programmes continuously provide major breakthroughs in understanding ecosystem variability, allow quantification of the ocean carbon cycle, and help understand the processes that link biodiversity, food webs, and changes in services that benefit human societies. A quantum jump in regional and global ocean ecosystem science can be gained by aggregating observations from individual time series that are distributed across different oceans and which are managed by different countries. The collective value of these data is greater than that provided by each time series individually. However, maintaining time series requires a commitment by the science community and sponsor agencies.

The importance of continued sampling by existing marine time series is now highlighted by the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO). The International Group for Marine Ecological Time Series (IGMETS) seeks to aggregate time series dispersed around the world in an effort to augment the observing power to look at changes within different ocean regions, to explore plausible reasons and connections at a global level and to highlight any locations of especially large changes that may be of special importance.

- Key:**
- Marine ecological time series site for which data were provided and included in the International Group for Marine Ecological Time Series analysis.
  - Marine ecological time series site for which participation in the initial International Group for Marine Ecological Time Series analysis was not confirmed at the time of the map's creation.



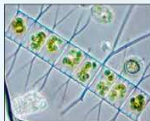
View of the NOAA ship Seward B. Shinnick recovering the Bongo Net during a GLOCE cruise. © NOAA



CTD sensor equipped with water sampling rosette deployed at the BATS station. © Woods Hole Oceanographic Institution



W12 plankton net deployed in the Baltic Sea. © IGC



Chlamydomonas oceanica. © IGC



Scientific research vessel Wajana returning from regular sampling at the Babia Is. station. © IGC



Limnodinium rotundum. © IGC



Recovery of a multi-vertebral plankton analysis in the Baltic Sea during a cyanobacteria bloom. © IGC



Soilnet trap deployment at the CARACO station. © IGC



# Global Ocean Science Report

Assesses for the first time the status and trends in **ocean science capacity around the world**

A global record of how, where, and by whom ocean science is conducted.

Information used for reporting towards **SDG target 14.a**



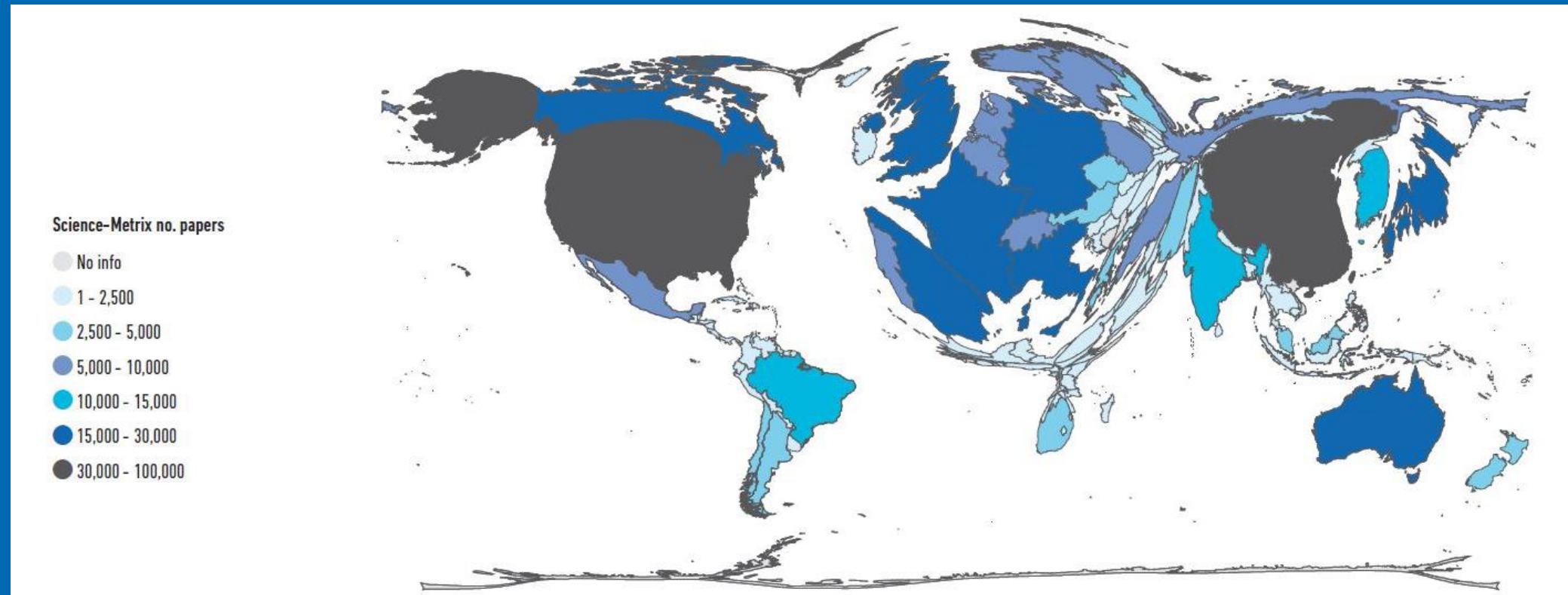
The Current Status  
of Ocean Science  
around the World







Ocean Science accounts for only between 0,04% and 4% of total research and development expenditures worldwide (GOSR, 2017)





# UN Decade of Ocean Science for Sustainable Development (2021-2030)



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**Sustainable  
Development  
Goals**







# **A Vision for the Decade**

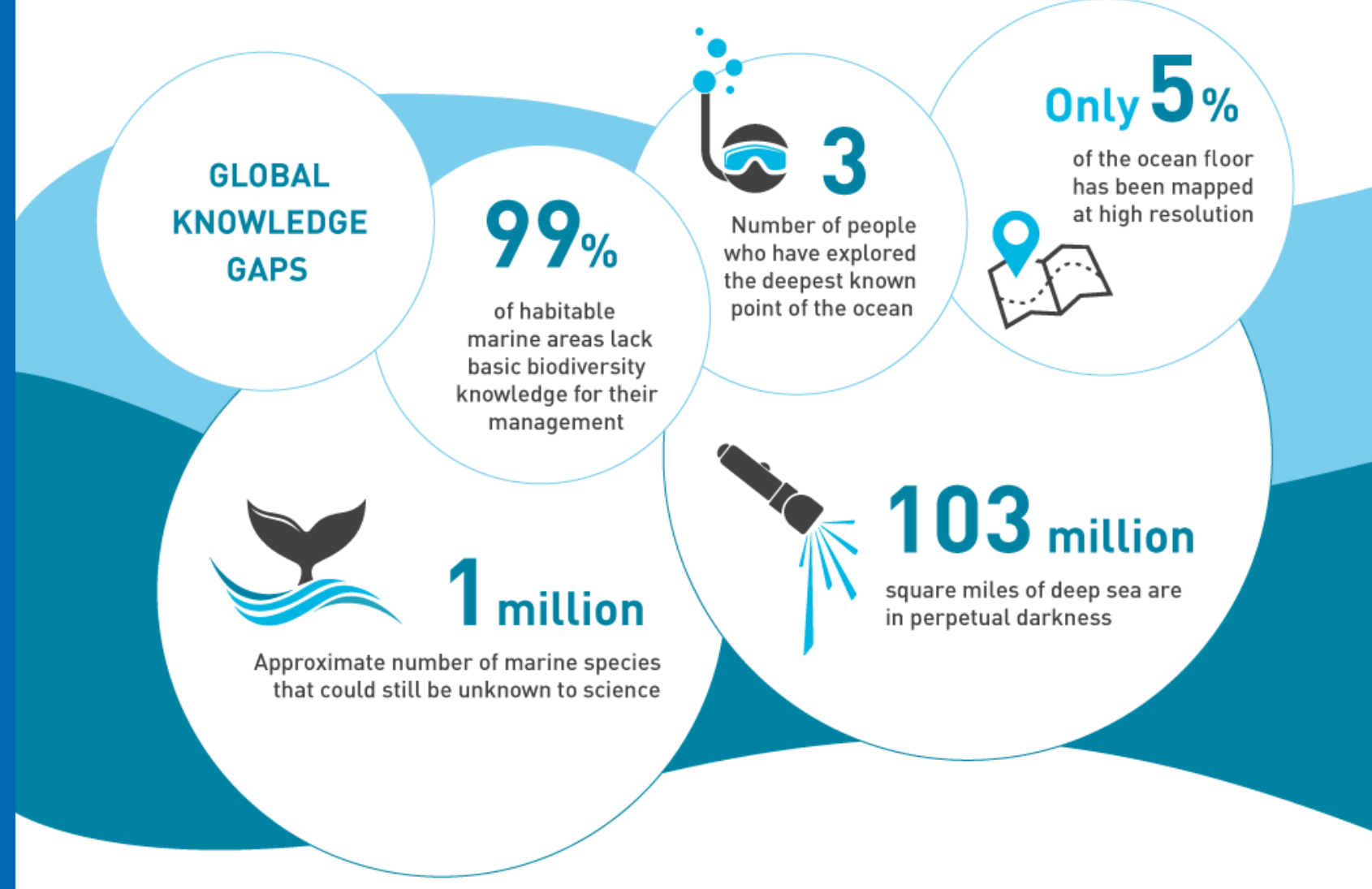
**Develop scientific knowledge, build infrastructure, and foster partnerships for a sustainable and healthy ocean**

**A global framework to structure and boost scientific efforts nationally and internationally to address global and regional SD challenges**





# A global collective research and investment framework to close the knowledge gaps





# A Decade to...

## BOLSTER

ocean observing  
and data systems

Potential activities ....

- An Ocean Observing System for All Major Ocean Basins
- New ocean technologies
- Operational Deep Ocean Observing System
- Open access, data portal for all
- Social science metrics

# A Decade to...

## ACCELERATE

transfer of marine  
technology, training  
and education

Potential activities ....

- Marine technology transfer/exchange hubs
- Self-driven regional capacity development programmes
- Ocean literacy initiatives
- Citizen science
- Gender focused programmes



# A Decade to...

## DELIVER

best available knowledge  
to decision-makers

Potential activities ....

- Promotion of Science/policy mechanisms
- Consolidated network of Decade partners
- Enhanced National arrangement for SD
- Regional & global dialogue enhancement
- Peace through science initiatives

# Messages

- Match-making Parties' needs with science
- Elucidating (NDCs, Global Stocktake)
- Targets, methodologies and indicators
- Modelling and predictions



# Thank You

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Decade of  
Ocean Science  
for Sustainable  
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The Ocean We Need  
for the Future We want