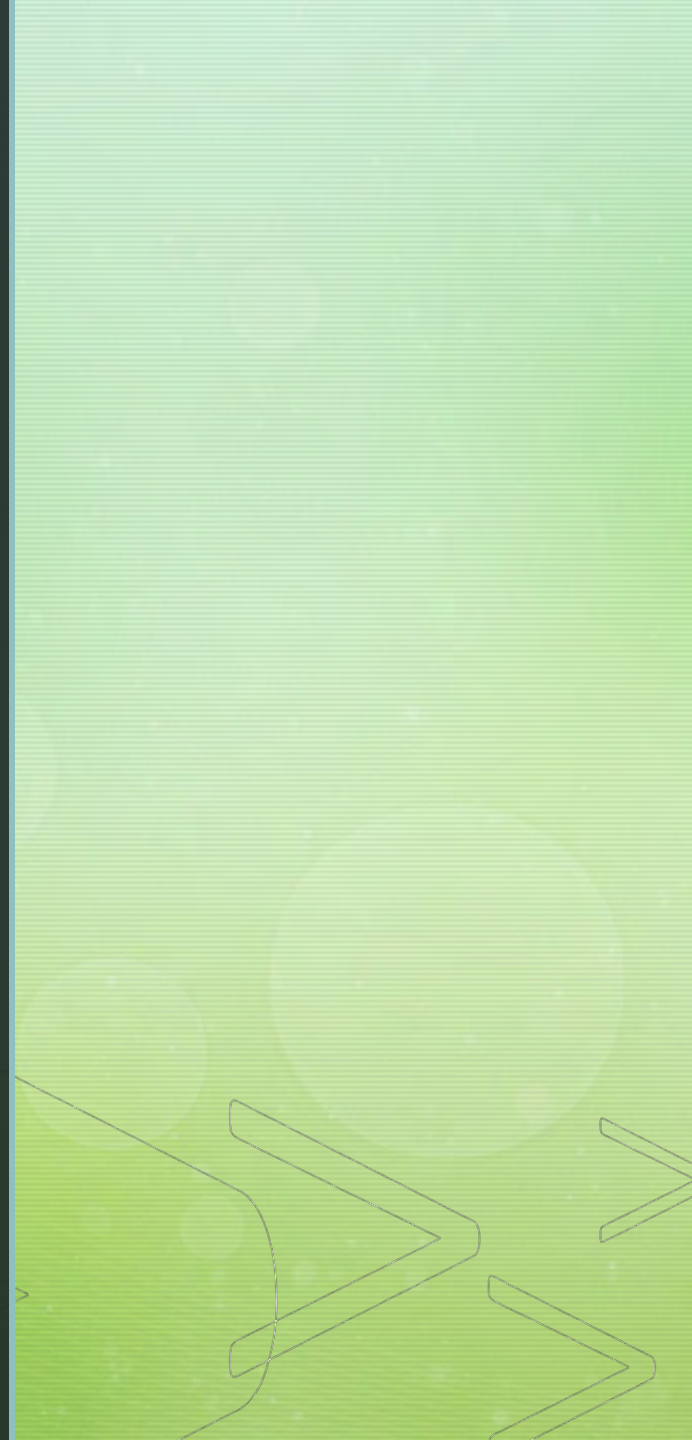


Restoration and Recovery of the Oceans



Remarks to the G7 2023

Marcia McNutt, US National Academy of Sciences



2023 Recommendations

- Restore and conserve the oceans and their biodiversity by promoting MPAs, ending damaging fishing practices, and enforcing regulations on invasive species. Incentivize conservation.
- Create a sustainable ocean through international cooperation, ecosystems-based management, public awareness. Remove ill-directed and counterproductive incentives.
- Increase scientific support for ocean management through human capital development, innovation in ocean observing, and data sharing.

Ocean Science Thematic Areas Cross-Cut UN Sustainability Goals



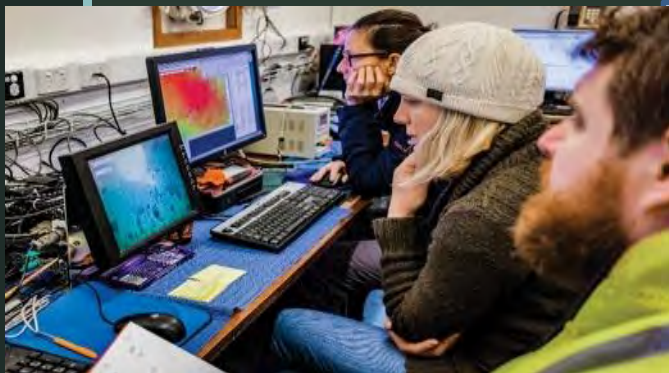
A Clean Ocean

Sources of pollution are identified, quantified and reduced, and pollutants removed from the Ocean.



A Healthy & Resilient Ocean

Marine ecosystems are mapped and protected, multiple impacts, including climate change, are measured and reduced, and the provision of Ocean ecosystem services is maintained.



A Predicted Ocean

Society has the capacity to understand current and future Ocean conditions, forecast their change and impact on human wellbeing and livelihoods.



Societal Outcomes Promoted by the Decade



A Safe Ocean

Human communities are protected from ocean hazards and the safety of operations at sea and on the coast is guaranteed.



A Sustainable Productive Ocean

The provision of food supply and alternative livelihoods are secured.



A Transparent and Accessible Ocean

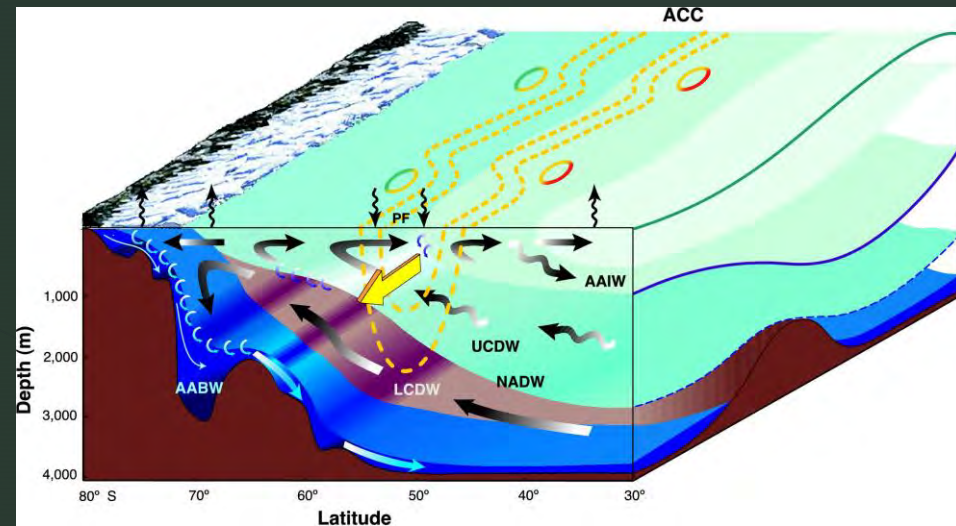
All nations, stakeholders and citizens have access to ocean data and information, technologies, and are capable of making informed decisions.



Slide modified from Craig McLean, NOAA

Delivering on a transparent and predictable ocean

Send instruments to sea, not people. Bring back data, not samples



AI control of an *in-situ* mission

AUV searches for signal of interest, maps it out in time and space, and then collects samples to return to the lab

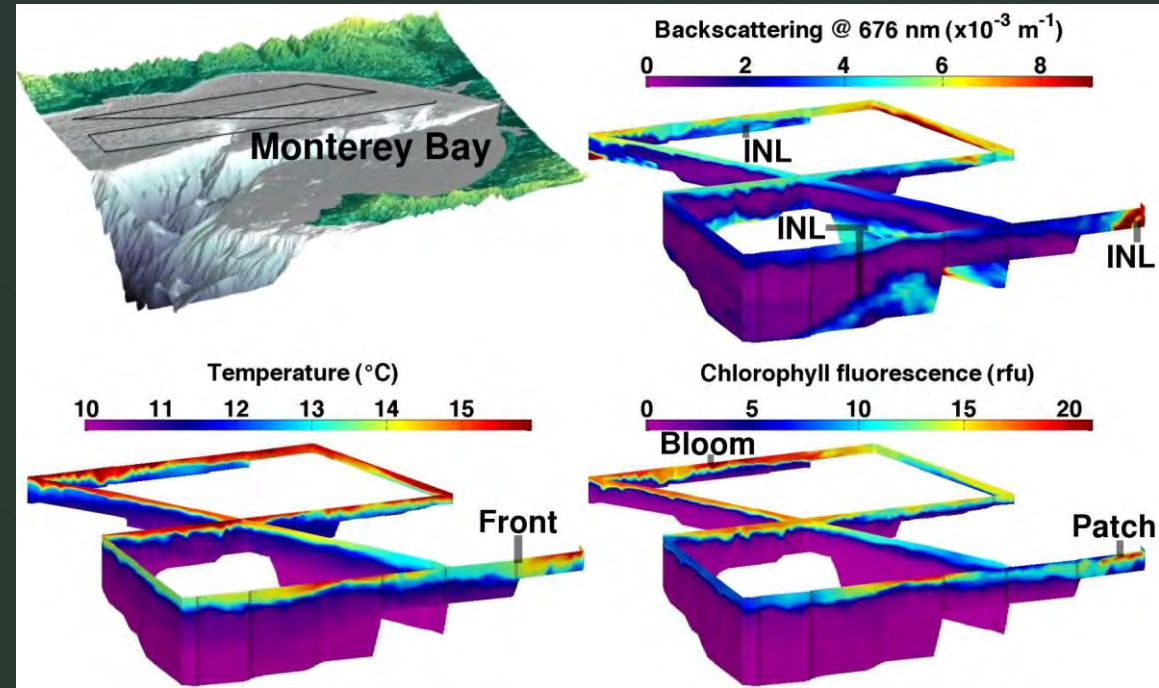
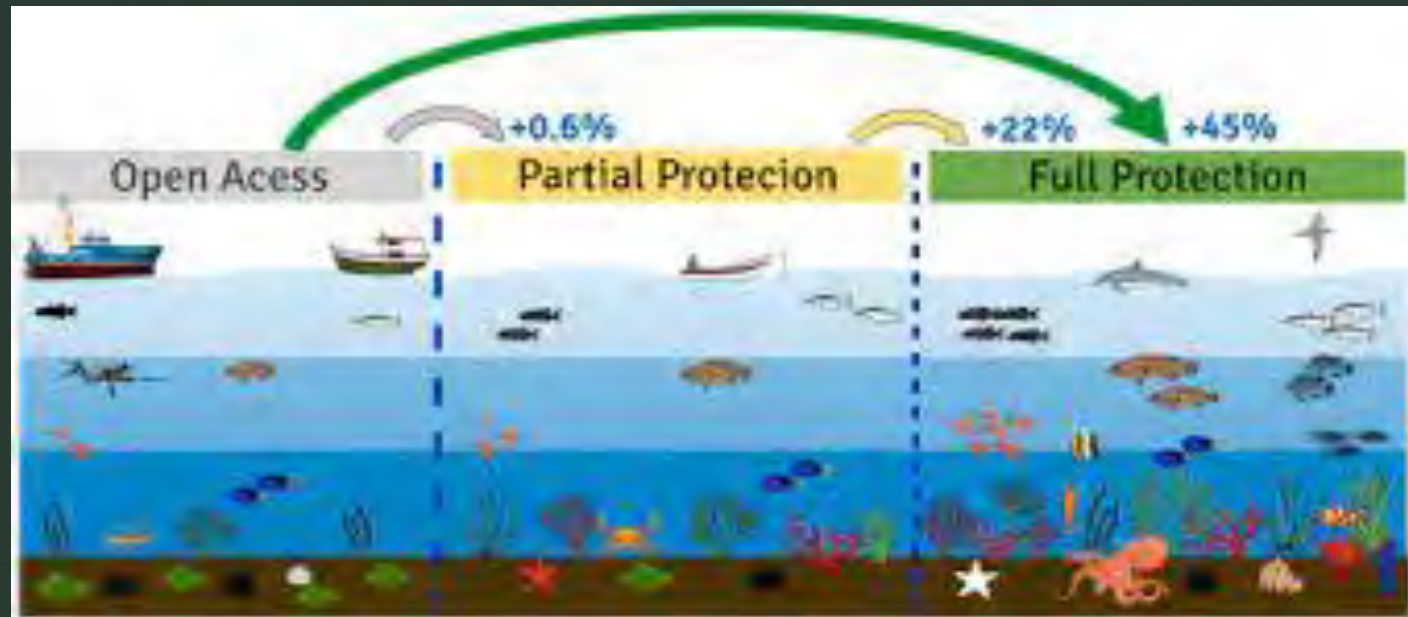


Figure from Kanna Rajan



Delivering on a sustainable and productive ocean



Create the triple bottom line: more fish in the sea, more fish for food, with less effort per catch. The new UN High Seas Treaty is an important step, but many details TBD.

Take early action on emerging ocean uses

- Ocean energy (wind, tides, waves, energy gradients)
- Deep-sea mining
- Enhanced carbon storage



Delivering on a
safe ocean

Need situational awareness



Situational Awareness on Land

- Weather up to 10-days out for temperature, rain, wind, major events
- Doppler radar maps
- Earthquake early warning
- Traffic report and accident alert



Public awareness of ocean issues

“In the end, we will conserve only what we love; we will love only what we understand, and we will understand only what we are taught.” Baba Dioum

