National Academy of Sciences Decadal Survey of Ocean Sciences *for the* National Science Foundation

Public Private Partnerships in Ocean Sciences, Strengthening Partnerships through the Blue Economy Services and Products

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National Centers for Environmental Information (NCEI)

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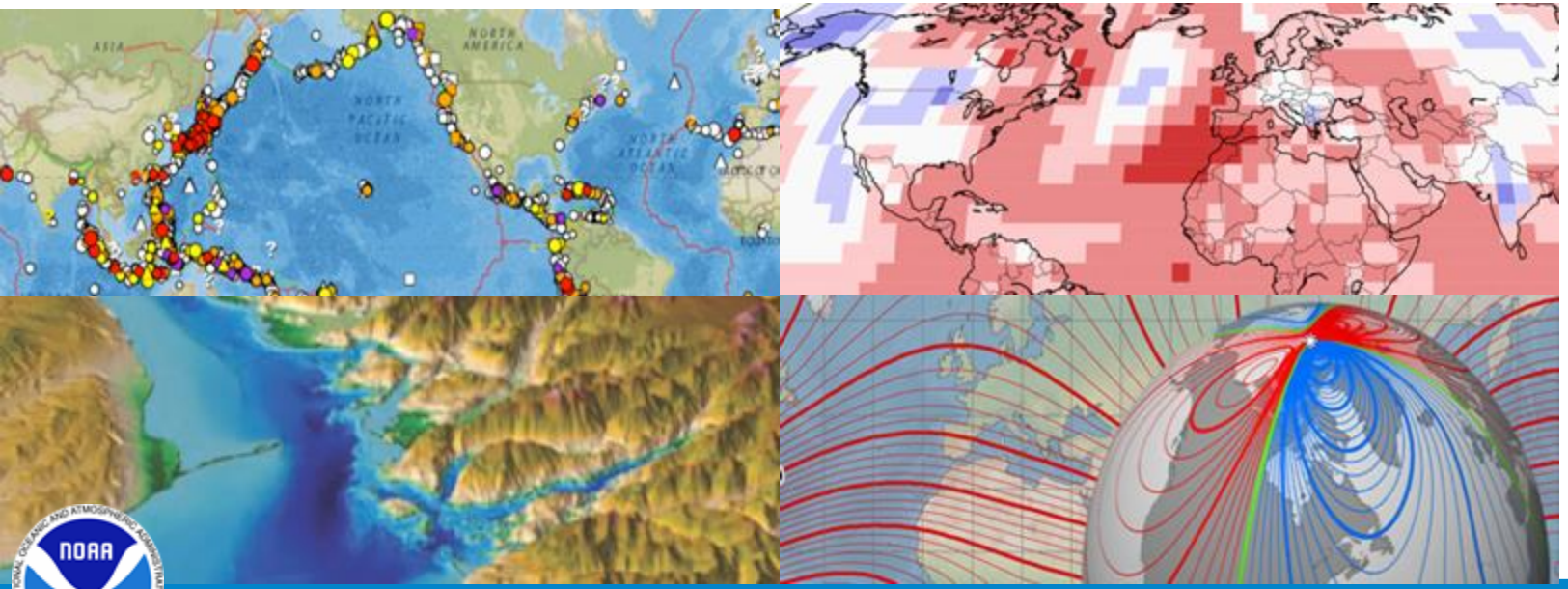
NCEI's Value to the Nation

Range of Products

- Time scale: Hourly to Decadal
- Geographic scale: Local to Global

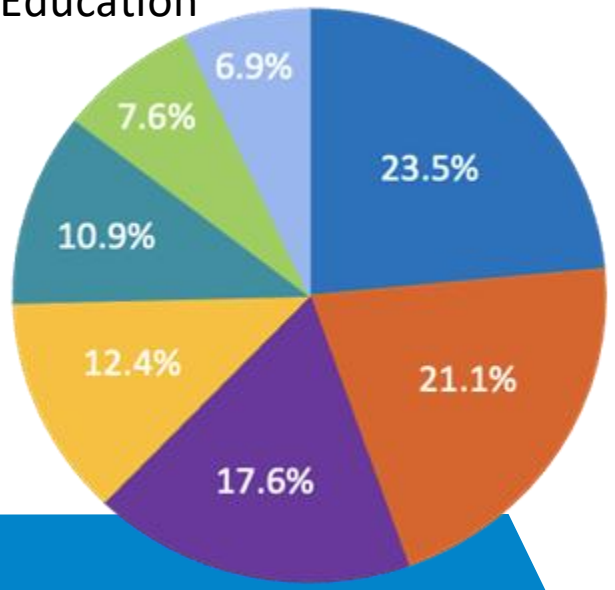
Technical Expertise

- Aerosols to Coastal Inundation
- Drought Monitoring to Ocean Surface Winds
- Paleoclimatology to US/Global Climate Monitoring



Stakeholders by Sector

- Science, Technology, and Engineering
- Ecosystems (Agriculture/Aquaculture)
- Transportation and Infrastructure
- Energy
- Insurance, Finance, and Legal
- Health and Emergency Management
- Higher Education

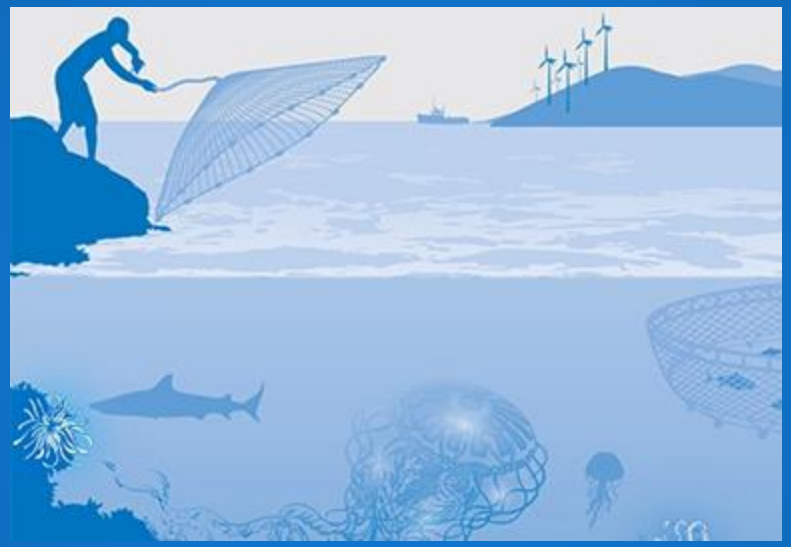


What's "New" About the New Blue Economy?

Ocean Economy

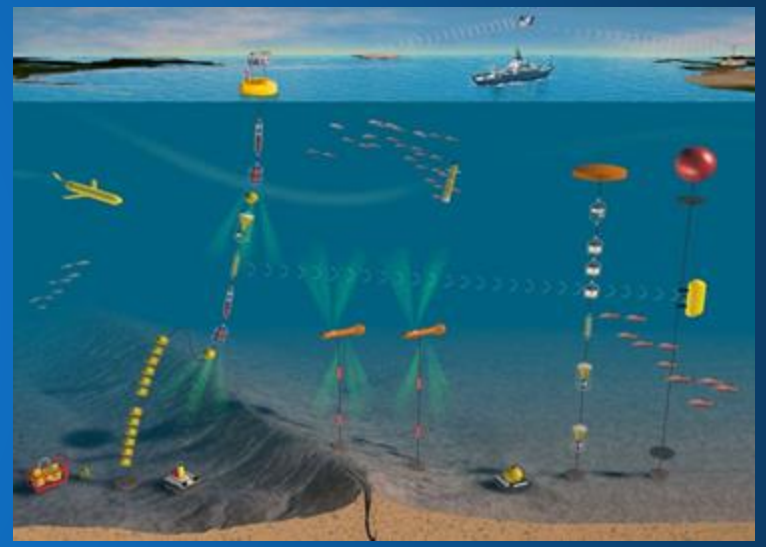
All economic activities related to the oceans, seas, and coastal regions.

Blue Economy



Couples economic growth, social inclusion, and the improvements of lives and livelihoods, while ensuring environmental sustainability of the ocean and coastal areas.

New Blue Economy



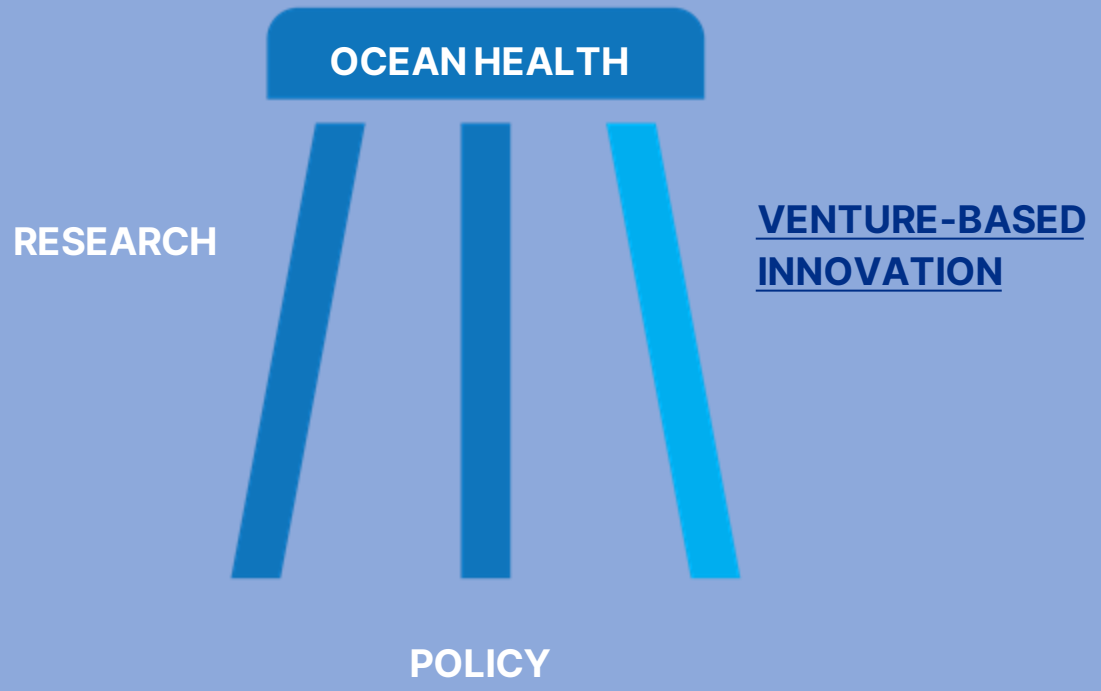
Uses technology, data and information to catalyze public and private sector innovation and inform smart decision making across all Blue Economy sectors.

NOAA Roles in the New Blue Economy

Opportunities for Collaboration

- Promoting and fostering **innovation** by:
  - Increased ocean and coastal observations
  - Providing accessible, reliable, consistent and accurate data
  - Continuously engaging: developing "principles" and clarifying roles and responsibilities
  - Conducting and supporting research, development, acquisition and application of new technologies
- Promoting and developing a diverse and ready New Blue Economy **workforce**
- Optimizing the **application** of science & technology to fulfill NOAA missions

Third leg incentivizes commercial solutions to ocean health challenges:



Innovation Gateway to the Gulf of Mexico

Gulf Blue & The Navigator are advancing world-changing technologies at the intersection of ocean and atmospheric science

◀ WEST New Orleans

Mobile EAST ▶

A BlueTech Cluster: Uncrewed Systems (UxS)

A Regional Blue Economy Nexus

- **What we are doing:**
  - Building partnerships to develop capability to use UxS to increase col
  - Promote data driven decisions and foster innovation
- **Benefits to the stakeholders**
  - Data to support decision making in the public interest.
  - Data is open to public. NCEI refines the data into information products like World Ocean Database (WOD).
  - Promote workforce development and technology
- **Opportunities**
  - Technology development and transitions (Research to Operations)
  - Inexperienced workforce (pilots/drone operators, with data skills)
  - Need rapidly advancing data assembly skills, to take the data to information

Expected Outcome: knowledge of our oceans, national workforce, technology advancement

A National Use for a Fisheries Fleet of Uncrewed Ocean Systems

What we are doing: Using technology to make informed, data driven decision on stock assessments

Benefits

- Scalable from regional to national to global
- Monitoring of habitat and water quality
- Minimize interaction with protected species through telemetry monitoring
- Help asses population size by determining prey abundance

Supported fisheries across US

- **West Coast**: Pacific hake
- **East Coast**: Atlantic cod
- **Gulf of Mexico**: Snapper, Shrimp

Opportunities

- Exponential increase in data collected in regional waters
- Expansion of workforce across disciplines
- Evolving technology specifically for fisheries

Some fisheries facts

- **3 out of 7**: People depend on ocean as primary source protein[1]
- **$2.5 trillion annually**: Ocean contribution to global economy[2]
- **600 million**: Worldwide the number of livelihoods that depend at least partially on fisheries and aquaculture[3]

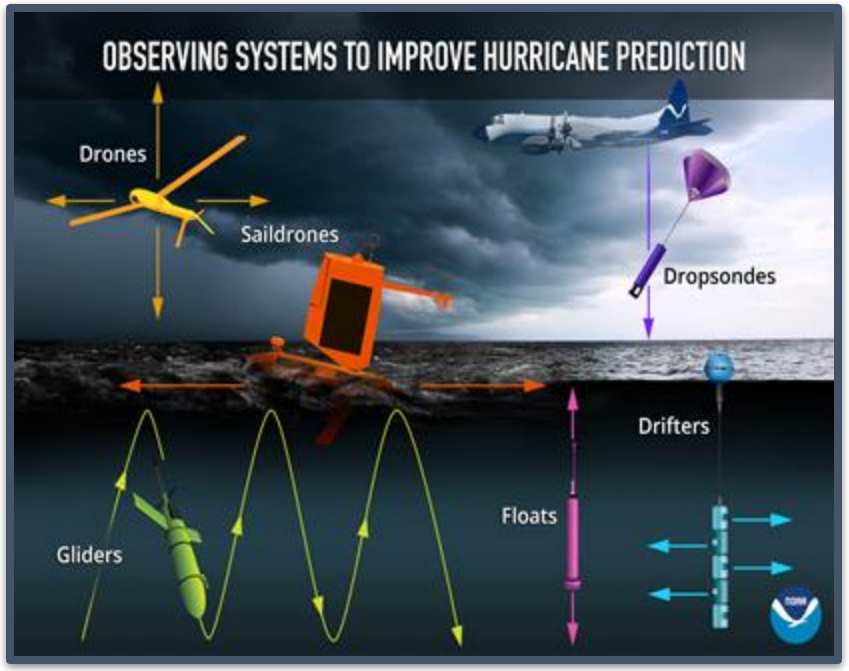
Image credit: Tim Silva, courtesy of WHOI

Expected Outcome: knowledge of our oceans, information supporting fisheries management, national workforce

A Global Impact on Marine Weather Observation

- **What we are doing:**

Disseminating real-time observations from UxS to the global community for numerical weather prediction and natural hazard detection.



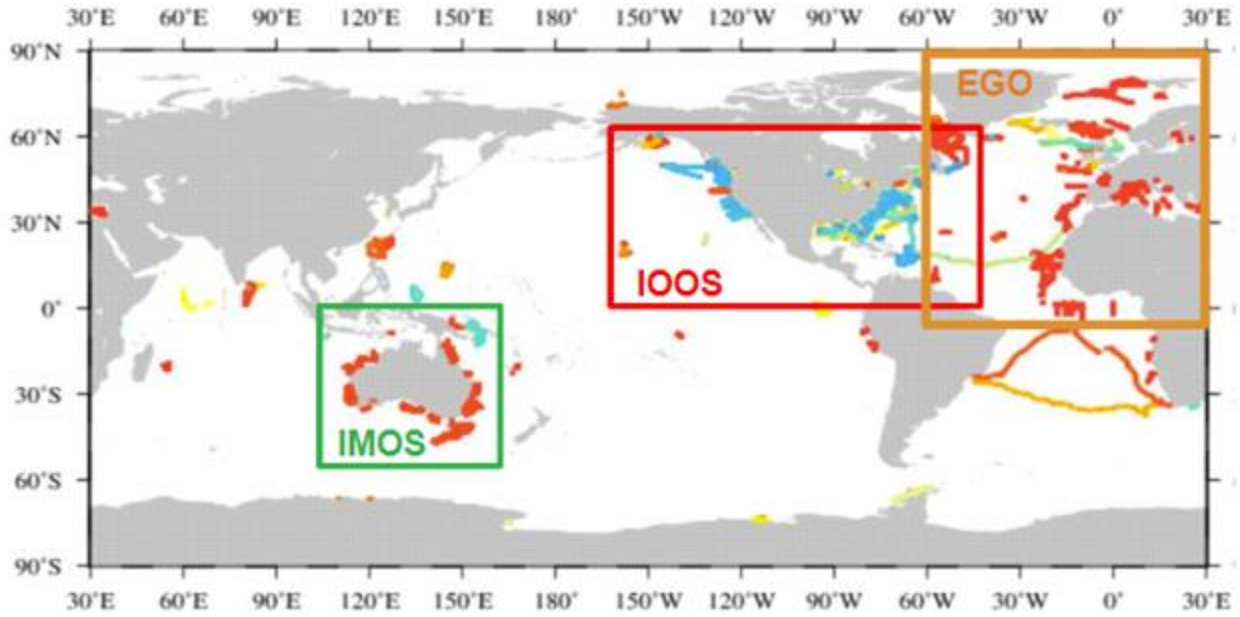
- **Benefits to the stakeholders**
  - Process studies to inform needs for long-term observing
  - Data buys allow for more rapid transition to operations
  - Rapid response capability, the right place at the right time
  - Promotes environmental sustainability of observing system & methods

- **Opportunities**
  - Technology innovation: duration, distance, time, and operating envelope
  - Inexperienced workforce (pilots/drone operators, with data skills)
  - Cost

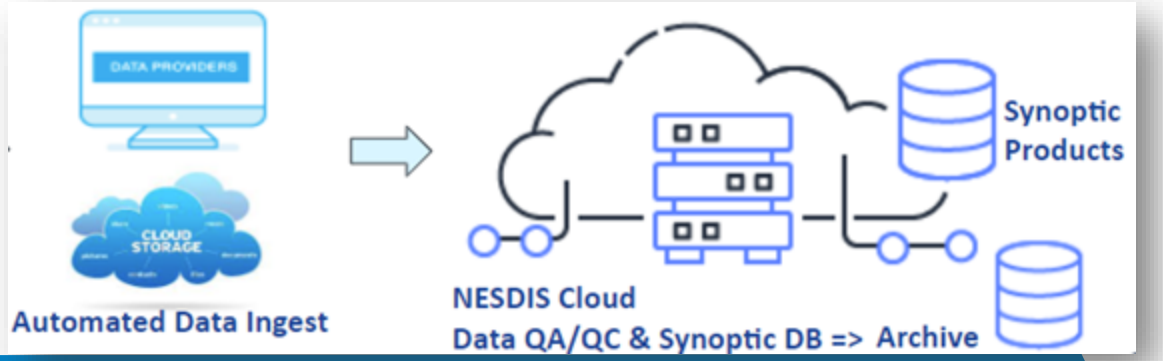
Expected Outcome: knowledge of our oceans, information supporting weather forecast, national/global economy

Tomorrow's Data landscape is happening today!!

- Data collected from UxS ***will launch new sectors of our economy*** and improve efficiency in existing ones.
- ***Innovations and investment in data management can optimize the use of UxS*** data in both the public and private sectors to support environmental products and develop historical baselines.
- ***Properly curated***, UxS data can yield large societal and economic returns.



Gliders contributed almost 50% of all World Ocean Database holdings in 2020!



Thank you
Questions?