ECONOMIC VALUE OF OCEAN OBSERVATIONS

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TODAY’S AGENDA

● NOAA’s Mission
● Broader Economic Impacts
  ○ Measuring the Marine Economy
● Economic Valuation of:
  ● Marine Vessel Observations
● Conclusions
NOAA’s Mission and Vision

MISSION

Science, Service, Stewardship
- To understand and predict changes in climate, weather, oceans and coasts
- To share that knowledge and information with others
- To conserve and manage coastal and marine ecosystems and resources

VISION

- Resilient Ecosystems, Communities, and Economies
- Healthy ecosystems, communities and economies that are resilient in the face of change.
Observations account for $2.7B of NOAA’s $5.45B budget

NOAA Strategic Priorities

Healthy Oceans

Climate Adaptation and Mitigation

Weather Ready Nation

Resilient Coastal Communities and Economies
NOAA Ocean Observations

Buoy Support

Coral Reef Research

Fisheries and Stock Assessment

Ocean Exploration

Marine Mammal Management

Hydrographic Survey and Charting

Education

General Research
Nation’s fisheries valued at $200 billion

In 2015, approximately 13 million recreational saltwater anglers took 61 million saltwater fishing trips around the country, spending $4.5 billion on fishing trips and $29 billion on durable fishing-related equipment.

In 2015, more than 9.7 billion pounds of finfish and shellfish were landed, valued at $5.6 billion, not including the downstream economic value.
NOAA Products and Tools: Weather Forecasts

U.S. GDP varies (positively or negatively) 3.4% year to year due to weather;
this equated to $545 billion in 2016
NOAA Products and Tools: Seaports

U.S. seaports support $4.6 trillion in economic activity
Economic Value of Observations from NOAA Vessels

- Estimated the value of data collected by NOAA ships
- 638 products supported by NOAA ships
- 12 product value chain descriptions
- Estimated the value for 6 NOAA products
Nautical Chart Value Chain

Data collection
- NOAA Fleet
- NOS Bay Hydro II
- Navigation Response Teams
- Other federal agencies
- Hydrographic data from private vessels

NOAA Product
Nautical Charts (Paper and Electronic)

Product Dissemination
- NOAA website
- Certified vendors

Complementary Products
- Third-party software applications

Users
- Recreational boaters
- Commercial and light commercial vessels
- Courts of law
- Cargo and SOLAS class vessels
- Document ship routes & hazards
- Navigate: optimize route & avoid hazards
- Comply with gov’t regulations

Societal Value
- Settlement of maritime legal disputes
- Reduced time at sea, cost savings, increased economic activity
- Avoided loss/death/injury
### Annual Benefit of NOAA Products and NOAA Fleet

<table>
<thead>
<tr>
<th>Product</th>
<th>Anticipated benefit of product ($million)</th>
<th>Anticipated benefit attributed to NOAA fleet ($million)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Seasonal forecasts</strong>: El Niño Southern Oscillation Outlook</td>
<td>$560 - $1,300</td>
<td>$26 - $266</td>
</tr>
<tr>
<td><strong>Coral reefs</strong>: Coral Status and Trends Report</td>
<td>$593 - $1,185</td>
<td>$90 - $711</td>
</tr>
<tr>
<td><strong>Sea level rise</strong>: Sea Level Rise Viewer</td>
<td>$1,480</td>
<td>$29.6 - $556</td>
</tr>
<tr>
<td><strong>Hydrographic surveys</strong>: Nautical Charts Products</td>
<td>$58 - $119</td>
<td>$17 - $48</td>
</tr>
<tr>
<td><strong>Ecosystem management</strong>: National Marine Sanctuary Condition Reports</td>
<td>$2,420 - $5,230</td>
<td>$605 - $1,830</td>
</tr>
</tbody>
</table>
Value Chain Conclusions

- Value chain analysis useful to understand final products and end users
- Value chains can identify products for further analysis
- Ultimately estimate the value of observational infrastructure/products
What is the Ocean Economy?

Economic activities that:

● take place in the ocean,
● use outputs from the ocean, or
● make products for use in the ocean.

Currently no broad consensus about what should be included:
Challenges for Characterizing U.S. Ocean Economy

- Scale of U.S. EEZ
- National accounts do not distinguish between maritime and terrestrial based economic activity.
- Difficult to define what counts as maritime/ocean industry
- Emerging maritime based industries (e.g. blue technology, aquaculture, offshore renewable energy)
- Dependance on natural systems that are difficult to measure and monitor
The U.S. Economy and Relationship to GDP

U.S. ECONOMY
GDP = ~$20 TRILLION
(2017)
The U.S. Economy and Relationship to GDP

TOTAL ECONOMY OF SHORE-ADJACENT COUNTIES
~46% of U.S. GDP
The U.S. Economy and the Relationship to GDP

ECONOMIC ACTIVITIES USING OCEAN RESOURCES AS AN INPUT
~2 % of U.S. GDP
Economics: National Ocean Watch (ENOW)
Economics: National Ocean Watch (ENOW)

- Provides time-series data (2005-2014) on the ocean and Great Lakes economy
- Includes six economic sectors dependent on the oceans and Great Lakes
- Available for counties, states, regions, and the nation in a wide variety of formats
- Updated annually
Economics: National Ocean Watch (ENOW)

INDICATORS
● Establishments
● Employment
● Wages
● GDP
● Self-Employed Workers
● Gross Receipts
Economics: National Ocean Watch (ENOW)
Accessing ENOW Data

www.coast.noaa.gov/digitalcoast/data/enow
Ocean Economy Satellite Account (OESA)
Ocean Economy Satellite Account (OESA)

- Estimates the ocean-dependent shares where only part of an industry's output is ocean-dependent
- Provides a more complete and accurate estimate of maritime based economic activity that NOAA supports
- Accounts maintained over time can monitor trends, highlight emerging industries, and show dependencies between industries.
What is a Satellite Account?

- Satellite accounts are statistics produced by the Bureau of Economic Analysis (BEA) that focus on a particular aspect of the economy that is not directly addressed in other economic statistics.

- The data presented in a satellite account supplement and are consistent with BEA’s core statistics such as gross domestic product (GDP).

- The Ocean Economy Satellite Account (OESA) measures contributions of ocean and coastal dependant industries to GDP.

- The goal of the OESA is to highlight ocean production and spending already present in the national accounts data.
NOAA BEA Information Resource would also show indirect linkages to the ocean economy - like inland manufacturers and farmers who gain access to international markets through our coastal ports.
OESA Progress

● An experimental Ocean Economy Satellite Account will be released this month
● Extensive vetting will occur with industry, government, and researchers, including Federal Register notice and industry associate meetings (Oceans 18, Blue Tech Week, Offshore Technology Conference)
● Industry specific estimates will be refined based on feedback and additional research
● Updated statistics will be generated in September 2019
Questions?

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