“NSF Ocean Sciences Update”
Ocean Carbon & Biogeochemistry (OCB)
WHOI
July 20, 2015

Rick Murray
Division Director, Ocean Sciences
NSF in a post-“Sea Change” Ocean:
How Much…and Doing What?

Sea Change
2015-2025
Decadal Survey
of Ocean Sciences
Decadal Survey of Ocean Sciences, 2015-2025

NRC/NAS, Released Jan. 23, 2015

2013: David Conover, Div. Dir.

2014: Deborah Bronk, Div. Dir.

2015 - : Digestion, Planning, & Implementation

NSF “reply”
May 11, 2015
NSF in a post-”Sea Change” Ocean: How Much...and Doing What?
Budget Trends

Sea Change (2014)
Budget Trends

Budget Trends

Sea Change (2014)  

July 13, 2015

[Graph showing budget trends for Science and Infrastructure over fiscal years 2000-2018]
Budget Trends

Sea Change (2014)  
July 13, 2015

OCE Percentage of Science vs Facilities Funding

Fiscal Year

Science Funding
Facilities Funding

Fiscal Year
NSF in a post-"Sea Change" Ocean:
How Much...and Doing What?

Sea Change
2015-2025
Decadal Survey
of Ocean Sciences
“Sea Change”: Science Priorities

• Rates, mechanisms, impacts, etc….sea level rise?
• Coastal, estuarine ecosystems and linkages.
• Ocean biogeochemistry & physics…and climate.
• Biodiversity & resilience of ecosystems, & changes.
• Marine food webs in the coming century.
• Formation and evolution of ocean basins.
• Geohazards (‘quakes, tsunamis, landslides, volc.).
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As noted by the report, these are not prioritized.

“Rather, they are ordered from the ocean surface, through the water column, to the seafloor.”

...AND...

NSF has in the past, and will continue in the future, fund excellent ocean science regardless of topic, maintaining the highest standards of external and internal review.
“Sea Change”: Other Key Aspects

- Cyber-infrastructure (CI) throughout OCE.
- Governance & community engagement of OOI.
- Technology and development.
- Partnerships (interagency, private, etc.)
The Path Forward: Guiding Principles

• *Think about what we can do – not what we can’t.*
The Path Forward: Guiding Principles

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- *Oceanography isn’t a laminated brochure…*
The Path Forward: Guiding Principles

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- *Failure can be a good thing...*
The Path Forward: Guiding Principles

• *Think about what we can do – not what we can’t.*

• *Oceanography isn’t a laminated brochure…*

• *Failure can be a good thing…*

• *Eradicate the phrase “alternative career”.*
## Mapping of Science and Infrastructure

Table 3-2 Alignment of current NSF-funded ocean research infrastructure to the eight decadal science priorities. A “C” indicates a critical asset, while “I” indicates an important asset. The approach taken to reach this alignment is discussed in the text. A list of other critical or important infrastructure is also included.

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<td>Other Critical or Important Infrastructure Assets</td>
<td>Argo, tide gauges, satellites, ice-ocean models, coring facilities and core repositories, mission-specific drilling platforms (MSPs)</td>
<td>River gauges, hydrologic models, satellites, coring facilities and core repositories</td>
<td>Argo, modeling, surface weather analyses, satellites, coring facilities and core repositories, acoustic tomography, MSPs</td>
<td>Fisheries surveys and vessels, sequencing facilities, manned/unmanned vehicles, satellites</td>
<td>Fisheries surveys and vessels, taxonomy, isotope facilities, manned/unmanned vehicles, satellites</td>
<td>Global seismograph arrays, magnetotellurics, manned/unmanned vehicles, Chrysalis, MSPs</td>
<td>Interferometric synthetic aperture radar, seafloor geodesy, satellites, manned/unmanned vehicles, Chrysalis, MSPs</td>
<td>Sequence facilities, manned/unmanned vehicles, Chrysalis, MSPs</td>
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Figure 3-9 Relative cost versus relevance of the infrastructure presented in Table 3-2 (colors are keyed to the same infrastructure). Ships are clustered into one group for this figure. The asterisk next to manned vehicles and ROVs indicates that costs increase if the costs of necessary support vessels are included.