DIRECTORATE FOR GEOSCIENCES (GEO) $783,310,000
-$93,200,000 / -10.6%

GEO Funding

(Dollars in Millions)

	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over FY 2016 Actual Amount	Change Over FY 2016 Actual Percent
Atmospheric and Geospace Sciences (AGS)	$253.54	-	$227.68	-$25.86	-10.2%
Earth Sciences (EAR)	179.67	-	161.01	-18.66	-10.4%
Integrative and Collaborative Education & Research (ICER)	83.47	-	71.60	-11.87	-14.2%
Ocean Sciences (OCE)	359.83	-	323.02	-36.81	-10.2%
Total	**$876.51**	**-**	**$783.31**	**-$93.20**	**-10.6%**

About GEO

GEO supports basic research that advances the frontiers of knowledge and drives technological innovation while improving our understanding of the many processes that affect the global environment. These processes include the planetary water cycle, geologic interactions that cross the land-ocean interface, and the behavior of ice sheets. Lives are saved and property is preserved through better prediction and understanding of natural environmental hazards such as earthquakes, tornados, hurricanes, tsunamis, drought, and solar storms. Basic research supported by GEO enables preparation for and subsequent mitigation of, or adaptation to, the effects of these and other disruptive natural events. Support is provided for interdisciplinary studies that contribute directly to national research priorities such as: mitigating the impacts of hazardous events; and understanding future availability and distribution of fresh water.

In addition, the Office of Polar Programs (OPP) operates as part of the Directorate for Geosciences; more information on OPP can be found in the Office of Polar Programs narrative.

GEO provides about 59 percent of the federal funding for basic research at academic institutions in the atmospheric, earth, and ocean sciences.

Major Investments

GEO Major Investments

(Dollars in Millions)

Area of Investment	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over FY 2016 Actual Amount	Change Over FY 2016 Actual Percent
CAREER	$16.20	-	$13.71	-$2.49	-15.4%
NSF INCLUDES	2.56	-	2.20	-0.36	-14.1%
INFEWS	5.00	-	8.00	3.00	60.0%
IUSE	6.14	-	5.00	-1.14	-18.6%
NRT	4.35	-	2.50	-1.85	-42.5%
Risk and Resilience	16.75	-	17.25	0.50	3.0%

Major investments may have funding overlap and thus should not be summed.

- Faculty Early Career Development (CAREER) (-$2.49 million to a total of $13.71 million): Supporting the next generation of researchers remains a priority for GEO, and the CAREER program continues to be a mechanism for recognizing the most innovative early career investigators.

- Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES) (-$360,000 to a total of $2.20 million): In FY 2018, NSF continues to emphasize NSF INCLUDES, which started in FY 2016 and aims to promote broader participation in the sciences.

- Innovations at the Nexus of the Food, Energy, Water System (INFEWS) (+$3.0 million to a total of $8.0 million): In FY 2018, NSF is continuing to build an interdisciplinary investment to study the food-energy-water nexus through INFEWS to enable accelerated research at the food-energy-water nexus.

- Improving Undergraduate STEM Education (IUSE) (-$1.14 million to a total of $5.0 million): Funding for the NSF-wide IUSE activity continues to support development of the next generation of geoscientists.

- NSF Research Traineeship (NRT) (-$1.85 million to a total of $2.50 million): GEO will continue to fund STEM graduate students in areas of national priority and support the development of transformative and scalable models for STEM graduate education.

- Risk and Resilience (+$500,000 to a total of $7.25 million): In FY 2018, NSF is continuing an activity to enhance national risk and resilience to hazardous events initiated in FY 2016. GEO plays a key role in advancing understanding of natural hazards such as tornados, hurricanes, earthquakes, and disruptive space weather events through the Prediction of and Resilience against Extreme EVENTS (PREEVENTS) program.

GEO Funding for Centers Programs and Facilities

GEO Funding for Centers Programs

(Dollars in Millions)

	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over FY 2016 Actual Amount	Change Over FY 2016 Actual Percent
Total, Centers Programs	**$5.00**	**-**	**$5.00**	**-**	**-**
STC: Center for Dark Energy Biosphere Investigations (OCE)	5.00	-	5.00	-	-

For detailed information on individual centers programs, see the NSF-Wide Investments chapter.

GEO Funding for Facilities

(Dollars in Millions)

	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over FY 2016 Actual Amount	Change Over FY 2016 Actual Percent
Total, Facilities	**$335.08**	**-**	**$284.32**	**-$50.76**	**-15.1%**
Academic Research Fleet (OCE)	85.88	-	77.80	-8.08	-9.4%
Arecibo Observatory (AGS)	4.10	-	3.82	-0.28	-6.8%
Geodesy Advancing Geosciences and EarthScope (EAR)	11.87	-	10.90	-0.97	-8.2%
International Ocean Discovery Program (OCE)	48.00	-	48.00	-	-
National Center for Atmospheric Research (AGS)	105.60	-	89.90	-15.70	-14.9%
National Nanotechnology Coordinated Infrastructure (ICER)	0.30	-	-	-0.30	-100.0%
Ocean Observatories Initiative (OCE and ICER)	54.98	-	31.00	-23.98	-43.6%
Seismological Facilities for the Advancement of Geosciences and EarthScope (EAR)	24.35	-	22.90	-1.45	-6.0%

For detailed information on individual facilities, see the Facilities and the Major Research Equipment and Facilities Construction chapters.

Funding Profile

GEO supports investment in research and education as well as research infrastructure such as the National Center for Atmospheric Research.

In FY 2018, GEO anticipates receiving a similar number of proposals as received in FY 2016. However, fewer awards will be supported resulting in a general decrease in funding rates.

GEO Funding Profile

	FY 2016 Actual Estimate	FY 2017 (TBD)	FY 2018 Estimate
Statistics for Competitive Awards:			
Number of Proposals	4,043	-	4,000
Number of New Awards	1,247	-	1,100
Funding Rate	31%	-	28%
Statistics for Research Grants:			
Number of Research Grant Proposals	3,675	-	3,700
Number of Research Grants	1,059	-	950
Funding Rate	29%	-	26%
Median Annualized Award Size	$149,381	-	$149,000
Average Annualized Award Size	$182,515	-	$182,000
Average Award Duration, in years	2.7	-	2.7

Program Monitoring and Evaluation

External Program Evaluations and Studies:

- In FY 2017, GEO will initiate an evaluation of its Education and Diversity program. Results are expected to be used to inform internal strategic planning activities. Final results from this study are expected in FY 2018.
- GEO has one evaluation underway, summarized below:
  - The Science, Engineering, and Education for Sustainability (SEES) program, ending in FY 2017, is currently being assessed. The evaluation is being conducted by Manhattan Strategy Group and will 1) examine the effectiveness of SEES, 2) complete a historical review of NSF's sustainability efforts in the past 15 years, and 3) review the SEES portfolio solicitations between 2010 to 2014. Final results from this study are expected in FY 2019.

Workshops and Reports:
In 2015, the National Research Council's Ocean Studies board released *Sea Change: 2015-2025 Decadal Survey of Ocean Sciences*[1]. This report greatly influenced NSF's Division of Ocean Sciences by addressing the strategic investments necessary to ensure a robust ocean science enterprise and providing guidance on research and infrastructure priorities.

In 2017, the National Academies of Sciences, Engineering, and Medicine's Space Studies Board released an *Assessment of the National Science Foundation's 2015 Geospace Portfolio Review*[2]. This study made recommendations for NSF's implementation of prior recommendations of a portfolio review.

Committees of Visitors (COV):

- In 2016, a COV reviewed the AGS Atmosphere Section. The COV report was presented to the GEO Advisory Committee, which convened in October of 2016. The COV found that the programs under review were well managed, but provided several useful recommendations.
- In 2017, COVs will review programs in EAR and parts of AGS.
- In 2018, COVs will review part of AGS and OCE.

[1]www.nap.edu/catalog/21655/sea-change-2015-2025-decadal-survey-of-ocean-sciences
[2]www.nap.edu/catalog/24666/assessment-of-the-national-science-foundations-2015-geospace-portfolio-review

The Performance chapter provides details regarding the periodic reviews of programs and portfolios of programs by external Committees of Visitors and directorate Advisory Committees. Please see this chapter for additional information.

Number of People Involved in GEO Activities

	FY 2016 Actual Estimate	FY 2017 (TBD)	FY 2018 Estimate
Senior Researchers	4,680	-	4,400
Other Professionals	2,751	-	2,600
Postdoctoral Associates	590	-	600
Graduate Students	2,330	-	2,200
Undergraduate Students	2,238	-	2,100
K-12 Teachers	-	-	-
K-12 Students	-	-	-
Total Number of People	12,589	-	11,900

DIVISION OF ATMOSPHERIC AND GEOSPACE SCIENCES (AGS) $227,680,000 -$25,860,000 / -10.2%

AGS Funding

(Dollars in Millions)

	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over FY 2016 Actual Amount	Change Over FY 2016 Actual Percent
Total	**$253.54**	**-**	**$227.68**	**-$25.86**	**-10.2%**
Research	**118.94**	**-**	**111.39**	**-7.55**	**-6.3%**
CAREER	5.61	-	5.05	-0.56	-10.0%
Education	**4.41**	**-**	**4.07**	**-0.34**	**-7.7%**
Infrastructure	**130.19**	**-**	**112.22**	**-17.97**	**-13.8%**
Arecibo Observatory	4.10	-	3.82	-0.28	-6.8%
National Center for Atmospheric Research (NCAR)	105.60	-	89.90	-15.70	-14.9%
Research Resources	20.49	-	18.50	-1.99	-9.7%

The mission of AGS is to extend intellectual frontiers in atmospheric and geospace sciences by making responsible investments in fundamental research, technology development, and education that enable discoveries, nurture a vibrant, diverse scientific workforce, and help attain a prosperous and sustainable future. AGS supports activities to further understanding of the dynamics of the sun, the physics, chemistry, and dynamics of the Earth's atmosphere and near-space environment, and how the sun interacts with the Earth's atmosphere. AGS provides support for: 1) basic science projects and 2) the acquisition, maintenance, and operation of observational and cyber-infrastructure facilities and services that enable and support modern day atmospheric and geospace science research activities. Although the majority of AGS support is through traditional individual investigator merit reviewed, multi-year grants, the division also supports small-scale, limited duration exploratory research projects; collaborative or multi-investigator group projects focusing on a particular project, subject, or activity; and the research conducted at facilities provided by the National Center for Atmospheric Research (NCAR), which extends and enhances the capabilities of the research conducted by AGS investigators.

The division focuses on support of fundamental research in the atmospheric and geospace sciences, aimed at improved understanding of all processes that contribute to predictability of weather and climate variability, and with respect to space weather and extreme weather events. Advances in atmospheric and geospace science contribute to and support the development of models for forecasting weather and understanding climate variability, including efforts to improve understanding of the dynamics, predictability, and impacts of extreme atmospheric and space weather events, and development of fundamental knowledge to support predictability and improve adaptation to and resilience with respect to short and long-term variability in weather. Through improvements to understanding of severe weather events and associated risks, and development of models that simulate and forecast such events, AGS contributes to commerce; the protection of life, property, and natural resources; and the establishment of a weather-ready and space weather-ready Nation. AGS also contributes to STEM education, early career scientists, and the continued development and support of an innovative scientific workforce that contributes to economic vitality and scientific and technological innovation.

About 26 percent of the AGS portfolio is available to support new research grants. The remainder supports research grants made in prior years and the research infrastructure that supports the capabilities, creativity, and innovation of the atmospheric and geospace science community.

FY 2018 Summary

All funding decreases represent change over the FY 2016 Actual.

Research

- Support for the AGS disciplinary and interdisciplinary research programs decreases by $7.29 million, to a total of $101.56 million, to support basic research into understanding weather and atmospheric variability and extreme atmospheric and space weather phenomena, and improving the fundamentals that lead to better predictability of extreme events.
- AGS will support the NSF Risk and Resilience initiative at a level of $1.50 million through GEO's PREEVENTS activity.
- Investments in the SEES portfolio decrease to zero, concluding the ramping down of the SEES Earth Systems Modeling (EaSM) program.
- Support for early-career researchers remains an AGS priority. The division will support CAREER grants at $5.05 million.

Education

- Education activities across AGS will be supported at a level of $4.07 million, reflecting the division's continuing commitment to the Research Experiences for Undergraduates (REU) program and support for postdoctoral fellows.

Infrastructure

- AGS funding for the Arecibo Observatory will decrease by $280,000, to a total of $3.82 million.
- NCAR support decreases by $15.70 million, to a total of $89.90 million. This decrease will require reassessment and refocusing of priorities for support by NSF and NCAR.
- Research Resources are allocated $18.50 million, a decrease of $1.99 million. Support will be used to enable the development of advanced technologies for high resolution observations of hazardous weather, and space weather events, for improved predictability, and to support data management and accessibility tools needed by the research community.

DIVISION OF EARTH SCIENCES (EAR) $161,010,000
-$18,660,000 / -10.4%

EAR Funding
(Dollars in Millions)

	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over FY 2016 Actual Amount	Change Over FY 2016 Actual Percent
Total	**$179.67**	**-**	**$161.01**	**$18.66**	**10.4%**
Research	**117.48**	**-**	**106.05**	**-11.43**	**-9.7%**
CAREER	7.43	-	6.66	-0.77	-10.4%
Education	**4.14**	**-**	**3.76**	**-0.38**	**-9.2%**
Infrastructure	**58.05**	**-**	**51.20**	**-6.85**	**-11.8%**
Geodesy Advancing Geosciences and EarthScope (GAGE)	11.87	-	10.90	-0.97	-8.2%
Seismological Facilities for the Advancement of Geosciences and EarthScope (SAGE)	24.35	-	22.90	-1.45	-6.0%
Research Resources	21.83	-	17.40	-4.43	-20.3%

EAR supports fundamental research into the structure, composition, and evolution of the Earth, and the life it has sustained over the four and a half billion years of Earth history. The results of this research will lead to a better understanding of Earth's changing environment (past, present, and future); the natural distribution of its mineral, water, biota, and energy resources; and provide methods for predicting and mitigating the effects of geologic hazards such as earthquakes, volcanic eruptions, floods, and landslides.

EAR supports research in geomorphology and land use, hydrologic science, geobiology and low temperature geochemistry, sedimentary geology and paleobiology, geophysics, tectonics, petrology and geochemistry, and integrated Earth systems. In addition to these fundamental research programs, EAR has an Instrumentation and Facilities program that supports community-based, shared-use facilities and the acquisition and development of instrumentation by individual investigators; EarthScope, a large-scale facility with an associated science program focused on studying the structure and tectonics of the North American continent; and an education program that funds a number of activities to attract and support students and young investigators to the field of Earth science.

In general, 36 percent of the EAR portfolio is available for new research grants and 64 percent is available for continuing grants and the research infrastructure needed by this community

FY 2018 Summary

All funding decreases represent changes over the FY 2016 Actual.

Research

- CAREER funding will be supported at a level of $6.66 million, a decrease of $770,000 million. The reduction is commensurate with the overall decrease for the division, and will result in approximately two fewer CAREER awards in FY 2018.
- EAR will support INFEWS at a level of $1.0 million, a decrease of $720,000.
- Support for Risk and Resilience research will be at $1.50 million, a decrease of $3.25 million. This decrease will be offset by an increase in GEO's ICER division.

- The FY 2018 Budget Request for disciplinary and interdisciplinary research programs is $95.93 million, a decrease of $6.68 million. This reduction will result in approximately 20 fewer awards in FY 2018.

Education

- EAR's support for education activities will be decreased by $380,000. Research Experiences for Undergraduates (REU) sites will be supported at $1.56 million, a decrease of $170,000. This reduction will result in about one fewer REU site being supported in FY 2018. Support for EAR Postdoctoral Fellowships will continue to be funded at $1.70 million, reflecting EAR's commitment to workforce development.

Infrastructure

- EAR will decrease investment in SAGE (-$1.45 million, to a total of $22.90 million) and GAGE (-$970,000, to a total of $10.90 million). Availability of portable instruments for research and maintenance and upkeep of the facility will decrease.
- Funding of all other research infrastructure at $17.40 million, a decrease of $4.43 million, will require that EAR's Geoinformatics Program fund no new projects in FY 2018 and that the Instrumentation and Facilities Program make no new commitments for instrument acquisition and development in FY 2018.

INTEGRATIVE AND COLLABORATIVE EDUCATION AND RESEARCH (ICER) $71,600,000 -$11,870,000 / -14.2%

ICER Funding

(Dollars in Millions)

	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over FY 2016 Actual Amount	Change Over FY 2016 Actual Percent
Total	**$83.47**	**-**	**$71.60**	**-$11.87**	**-14.2%**
Research	**52.68**	**-**	**59.90**	**7.22**	**13.7%**
CAREER	0.02	-	-	-0.02	-100.0%
Education	**16.49**	**-**	**11.70**	**-4.79**	**-29.0%**
Infrastructure	**14.30**	**-**	**-**	**-14.30**	**-100.0%**
National Nanotechnology Coordinated Infrastructure	0.30	-	-	-0.30	-100.0%
Ocean Observatories Initiative	14.00	-	-	-14.00	-100.0%

ICER supports novel, complex, or partnership projects in both research and education. These investments cut across traditional boundaries within the geosciences, encouraging interdisciplinary activities and responding directly to critical needs of the entire geoscience community. ICER's principal goals are to develop innovative means to initiate and support geoscience education, attract underrepresented groups to careers in the geosciences, foster the interchange of scientific information nationally and internationally, and to join with other parts of NSF in major integrative research and education efforts. In FY 2018, the division will make strategic investments in multidisciplinary research areas, international activities, education, diversity, and human resource development. The results of these investments will assist in ensuring that the U.S. has a well-educated and diverse workforce in the geosciences and in related technical fields such as resource exploration. Through investment in Risk and Resilience, ICER will improve predictability and risk assessment in order to increase resilience that will reduce the impact of extreme events on our lives, society, and economy. Research at the Food-Energy-Water nexus will result in understanding interactions across the FEW nexus, how it is likely to affect our world, and how we can proactively plan for its consequences.

In general, 48 percent of the ICER portfolio is available for new research grants and 52 percent is available for continuing grants.

FY 2018 Summary

All funding decreases/increases represent change over the FY 2016 Actual.

Research

- ICER support for NSF's INFEWS activity increases to $7.0 million. Much of GEO's support for INFEWS is being consolidated in ICER in FY 2018.
- The NSF-wide portfolio for Risk and Resilience research will be supported through GEO's PREEVENTS activity at a level of $13.0 million. Overall GEO support for PREEVENTS remains unchanged.
- ICER support for SEES falls to zero in FY 2018, reflecting the phase-out of this activity.
- ICER supports a varied portfolio of international collaborative activities. In FY 2018, this will total $6.43 million, and emphasize collaborative research across the Americas and activities sponsored by the Belmont Forum, a group of the world's leading and emerging funding agencies focused on providing international, multi-lateral research opportunities for sustainability.

Education

- In FY 2018, the ICER education portfolio is decreased by $4.79 million to $11.70 million. ICER supports most of GEO's participation in NSF-wide education programs, many of which are seeing reductions in FY 2018.

Infrastructure

- ICER provided GEO's contribution to the National Nanotechnology Coordinated Infrastructure. GEO support for this activity is being phased out in FY 2018 (-$300,000).
- In FY 2018, ICER will no longer provide support for operation and maintenance for the Ocean Observatories Initiative (OOI). This temporary support, from FY 2015 - 2017, helped enable OCE to maintain a robust research enterprise while transitioning its' facilities in response to the National Academy of Sciences' report *Sea Change: Decadal Survey of Ocean Sciences 2015-2025*,[3] released in January 2015.

[3] www.nap.edu/catalog/21655/sea-change-2015-2025-decadal-survey-of-ocean-sciences

DIVISION OF OCEAN SCIENCES (OCE) $323,020,000
-$36,810,000 / -10.2%

OCE Funding

(Dollars in Millions)

	FY 2016 Actual	FY 2017 (TBD)	FY 2018 Request	Change Over FY 2016 Actual Amount	Change Over FY 2016 Actual Percent
Total	**$359.83**	**-**	**$323.02**	**-$36.81**	**-10.2%**
Research	**168.34**	**-**	**151.92**	**-16.42**	**-9.8%**
CAREER	3.13	-	2.00	-1.13	-36.1%
Centers Funding (total)	5.00	-	5.00	-	-
STC: Dark Energy Biosphere Investigations	5.00	-	5.00	-	-
Education	**5.30**	**-**	**5.30**	**-**	**-**
Infrastructure	**186.19**	**-**	**165.80**	**-20.39**	**-11.0%**
Academic Research Fleet	82.79	-	77.80	-4.99	-6.0%
International Ocean Discovery Program (IODP)	48.00	-	48.00	-	-
Ocean Observatories Initiative (OCE portion)	40.98	-	31.00	-9.98	-24.4%
Research Resources	11.33	-	9.00	-2.33	-20.6%
Facilities Pre-Construction Planning (total)	3.09	-	-	-3.09	-100.0%
Regional Class Research Vessels (RCRV)	3.09	-	-	-3.09	-100.0%

OCE supports interdisciplinary research and technology, education, and cutting edge infrastructure that advances our scientific knowledge of the oceans to support the U.S. economy over the long term, provide vital information regarding national and economic security matters such as sea level rise, ocean storms and influences on weather, and to advance U.S. leadership in ocean science and technology. OCE provides support of basic scientific and technological research to better understand changing ocean circulation and other physical, chemical, and biological parameters. OCE also supports research on the geology of the ocean margins and sub-seafloor to investigate the stability of methane hydrates, natural hazards associated with earthquakes and volcanic eruptions, microbial life deep below the seafloor, and other fundamental ocean processes of high societal relevance. Ocean education emphasizes undergraduate REU programs and the interdisciplinary nature of ocean sciences and marine technology, and commonly leverages off research facilities and infrastructure via telepresence to far and distant seas. Since ocean science requires access to the sea, in partnership with the Office of Naval Research and academic institutions, OCE supports research vessels, deep submergence capability including submersibles and autonomous vehicles, and technologically advanced sensors and instrumentation. OCE research, technology, and infrastructure benefits society by advancing our understanding of natural hazards, defining the state of the ocean that contributes to understanding of weather, providing the scientific basis to ocean behavior of relevance to fisheries and aquaculture, and overall addresses the central role of the oceans as a national strategic resource, as recognized by numerous reviews by external bodies (e.g., National Academy of Sciences' Decadal Survey of Ocean Sciences, 2015-2025, *Sea Change*).

In general, 32 percent of the OCE portfolio is available for new research grants in basic science and technological innovation. The remaining 68 percent supports ongoing awards made in prior years, as well as the major research infrastructure of the Academic Research Fleet, the International Ocean Discovery Program, and the Ocean Observatories Initiative.

FY 2018 Summary

All funding decreases/increases represent changes over the FY 2016 Actual.

Research

- OCE's budget for disciplinary and interdisciplinary research will decrease by $15.96 million, to a total of $132.25 million, which reflects a strategic re-apportioning to continue to support ocean science research and technology programs as per *Sea Change* (National Academy of Sciences, 2015) recommendations.
- In FY 2018, OCE will specifically continue to invest resources into ocean technology via OCE's own programs as well as in coordination with other federal agencies.
- OCE will no longer participate in the Oceans and Human Health program, which was jointly supported with the National Institute of Environmental Health Sciences.

Education

- There is no change in OCE support ($5.30 million) for REU programs and other interdisciplinary education efforts.

Infrastructure

- OCE is decreasing support of ship operations within the Academic Research Fleet by $4.99 million, to a level of $77.8 million, due to the decrease in overall number of vessels, efficiencies gained by technological investment, as well as a fundamental reassessment of the provision of seismic capabilities to the U.S. academic and federal communities. This decrease is consistent with the recommendations from *Sea Change*.
- Funding is requested for continued support for operations of the drilling vessel, *JOIDES Resolution*, as part of the U.S. contribution to the IODP. The FY 2018 Request of $48.0 million maintains level funding with no decrease in maintenance and operations per *Sea Change*.
- The total support for operations and maintenance of the Ocean Observatories Initiative (OOI) will be decreased by $9.98 million from OCE, in addition to an end to ICER support, resulting in a total OOI support for operations and management in FY 2018 of $31.0 million. These decreases are strategically oriented to be consistent with the recommendations from the NAS's Decadal Survey, *Sea Change*.
- Preconstruction for the Regional Class Research Vessels (RCRV) concluded in FY 2016 with costs decreasing to zero in FY 2018. For more information on RCRV, see the MREFC chapter.