DIVISION OF ASTRONOMICAL SCIENCES (AST) $221,152,000
-$25,480,000 / -10.3%

AST 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	**$246.63**	**-**	**$221.15**	**-$25.48**	**-10.3%**
Research	**60.72**	**-**	**51.76**	**-8.96**	**-14.8%**
CAREER	4.63	-	4.17	-0.46	-9.9%
Education	**5.90**	-	**5.40**	**-0.50**	**-8.5%**
Infrastructure	**180.01**	-	**163.99**	**-16.02**	**-8.9%**
Arecibo Observatory	4.80	-	3.90	-0.90	-18.8%
Atacama Large Millimeter Array (ALMA)	37.65	-	43.48	5.83	15.5%
Daniel K. Inouye Solar Telescope (DKIST)	13.50	-	16.00	2.50	18.5%
Gemini Observatory	19.88	-	21.03	1.15	5.8%
National Optical Astronomy Observatory (NOAO)	21.99	-	20.67	-1.32	-6.0%
National Radio Astronomy Observatory (NRAO)[1]	41.73	-	32.86	-8.87	-21.3%
National Solar Observatory (NSO)[2]	9.50	-	5.00	-4.50	-47.4%
Other Astronomical Facilities	-	-	11.85	11.85	N/A
Mid-Scale Innovations Program (MSIP)	21.25	-	6.00	-15.25	-71.8%
Research Resources	9.71	-	3.20	-6.51	-67.0%

[1] The decrease in NRAO is chiefly due to the separation of the Green Bank Observatory and the Very Long Baseline Array from NRAO and ALMO, starting in FY 2017. That funding is now shown under the "Other Astronomical Facilities" line in this table.

[2] Totals do not include $11.50 million in FY 2016 and $14.0 million in FY 2018 for operations and maintenance support for the DKIST facility construction project. That funding is captured as part of the total presented on the DKIST line above.

AST is the federal steward for ground-based astronomy in the United States, funding research with awards to individual investigators and small research groups, and supporting operations of large telescope facilities via cooperative agreements. These telescope facilities provide world-leading, one-of-a-kind observational capabilities on a competitive basis to thousands of astronomers each year. These facilities also enable scientific advances by making archived data products available to researchers. AST also supports the development of advanced technologies and instrumentation and manages the electromagnetic spectrum for scientific use by the entire NSF community.

AST supports research to understand the origins and characteristics of planets, stars, and galaxies, as well as the structure that has evolved in the universe since its origin more than 13 billion years ago. The results of this research will lead to a better understanding of the cosmos, of the possibility of life existing on planets circling other stars, and of the nature of the mysterious dark matter and dark energy that comprise more than 95 percent of the mass-energy of the universe.

In general, about 28 percent of the AST portfolio is available for new research. About 61 percent of AST's budget supports the forefront instrumentation and facilities needed for progress at the frontiers of observational astronomy, while almost 20 percent supports the research of individual investigators. Through the MREFC appropriation, AST also oversees the construction of LSST and DKIST.

FY 2018 Summary

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

Research

- CAREER (-$460,000 to a total of $4.17 million): This level continues AST's commitment to early-career investigators and will support about 35 awards.
- Disciplinary and interdisciplinary research programs (-$8.68 million to a total of $44.03 million): Support for fundamental research is a major focus. This level will continue support for the Astronomy and Astrophysics Research Grants and Solar and Planetary Grants programs but at a lower level.

Education

- Partnerships in Astronomy and Astrophysics Research and Education (PAARE) (-$500,000 to a total of $1.0 million): Reduced proposal demand in FY 2016 has resulted in a shift in the funding balance between PAARE and other workforce development and early-career programs.

Infrastructure

- ALMA (+$5.83 million to a total of $43.48 million): As ALMA approaches steady state operations, funding includes an increase of the annual contribution to the ALMA Development Fund and long-term maintenance budget as agreed to by the international partners.
- Arecibo Observatory (-$900,000 to a total of $3.90 million): The FY 2016 Actual includes $700,000 in forward funding. The $200,000 balance of the reduction is consistent with the proposed divestment amount appearing in the FY 2017 Arecibo management solicitation.
- DKIST (+$2.50 million to a total of $16.0 million): This supports the continued ramp-up of DKIST operations within NSO to $14.0 million, plus the DKIST cultural mitigation award held steady at $2.0 million. See the Major Research Equipment and Facilities Construction chapter for more detail.
- Gemini Observatory (+$1.15 million to a total of $21.03 million): This supports a slight increase in operations and the instrument development fund as agreed to by the international Gemini Board.
- NOAO (-$1.32 million to a total of $20.67 million): This supports operations of NOAO's optical telescope and data science programs.
- NRAO (-$8.87 million to a total of $32.86 million): This decrease is due to the removal of the Green Bank Observatory and the Very Long Baseline Array (VLBA) from the NRAO base budget in FY 2017. Funding for GBO and VLBA is captured in the Other Astronomical Facilities line.
- NSO (-$4.50 million to a total of $5.0 million): Of the total change, most (-$2.50 million to zero) is due to the end of a one-time activity in FY 2016 to make NSO Space Weather infrastructure more robust, and the rest (-$2.0 million, to a total of $5.0 million) is a decrease in NSO base support with the divestment of facilities on Sacramento Peak and Kitt Peak and with emphasis shifting to DKIST operations.
- Other Astronomical Facilities (+$11.85 million to a total of $11.85 million): This funds operational support for GBO and VLBA (now operated by the Long Baseline Observatory), which were moved from the NRAO base budget as noted in the NRAO bullet above.
- Mid-Scale Innovations Program (MSIP) (-$15.25 million to a total of $6.0 million): Of the total change, -$13.25 million results from re-balancing MSIP with core individual investigator programs, but with lower priority given to MSIP while maintaining a minimal level for the program. The $2.0 million balance of the reduction is due to a technical adjustment to recategorize funding for the Dark Energy Survey Data Management within Research Resources below.
- Research Resources (-$6.51 million to a total of $3.20 million): This includes a reduction of $250,000 after the final increment of a five-year planning award for the Giant Segmented Mirror Telescope that is scheduled to end in FY 2017. Funding for other activities on this line are the Advanced Technologies and Instrumentation (ATI) program, which is minimally maintained and to be offered in alternating years, and the Dark Energy Survey Data Management, which remains constant at $2.0 million.