



NSF Division of Astronomical Sciences (AST) Update

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Outline

- Recent Science, Facility, and NSF News
- Status of FY 2016 Budget Request
- NSF Re-authorization bill (“America COMPETES”)
- Initial Responses to 2015 AAAC Recommendations
- Initial Responses to OIR System Committee Report



AST Personnel News

- Since January, six AST program officers (of total ~17) have left
 - Three rotators (one at end of term, two before end of term)
 - Three permanent staff (two retirements, one resignation)
 - One more VSEE will leave in August
- Personnel shortages occurring during the midst of three major facility management competitions
- Vacancies are being filled more slowly
 - Claire Cramer (detail from NIST) arrived in January
 - Joan Wrobel (IPA rotator) arrived in May
 - Chris Davis (permanent staff) will arrive in late June
 - Ed Ajhar has returned as temporary Expert this spring
- Not able to meet our goal of acting on 75% of proposals within six months of deadline
 - AAG and ATI actions are affected



Recruitment

- Open positions (2) for program director: AST-2015-0004 for permanent; AST-2015-0006 for VSEE or Fed Temp
 - Currently open until June 16, likely to extend to end of June
- Open position for program director for spectrum management: AST 2015-0003 for permanent; AST-2015-0005 for VSEE or Fed Temp
 - Currently open until June 15, likely to extend to end of June
- Open positions (2-4) for rotator program director: DCL AST 15-001 (“rotator”=IPA, Fed Temp, or VSEE)
 - Open until filled
- All announcements on AST web page, click on “Careers”



LSST Construction in Progress

- LSST “first stone” ceremony, April 2015
- Attended by NSF Director, President of Chile, US Ambassador to Chile





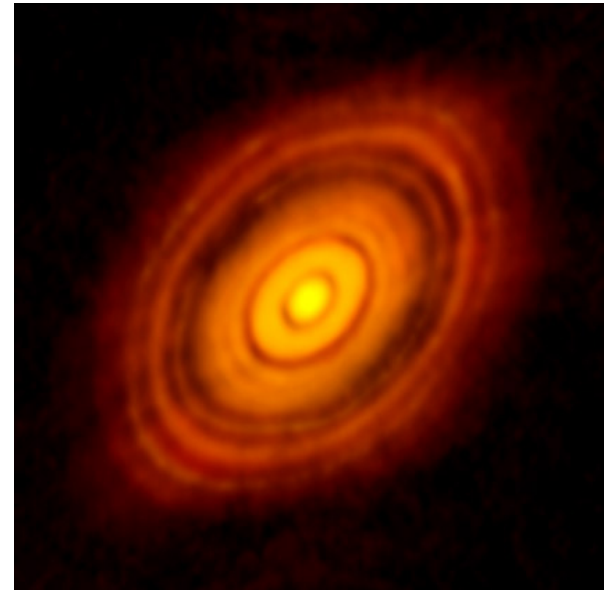
DKIST Progress

- Tremendous progress since site access was approved by Department of Land and Natural Resources in late 2012
- On track for beginning of operations in 2019



ALMA Construction Completed

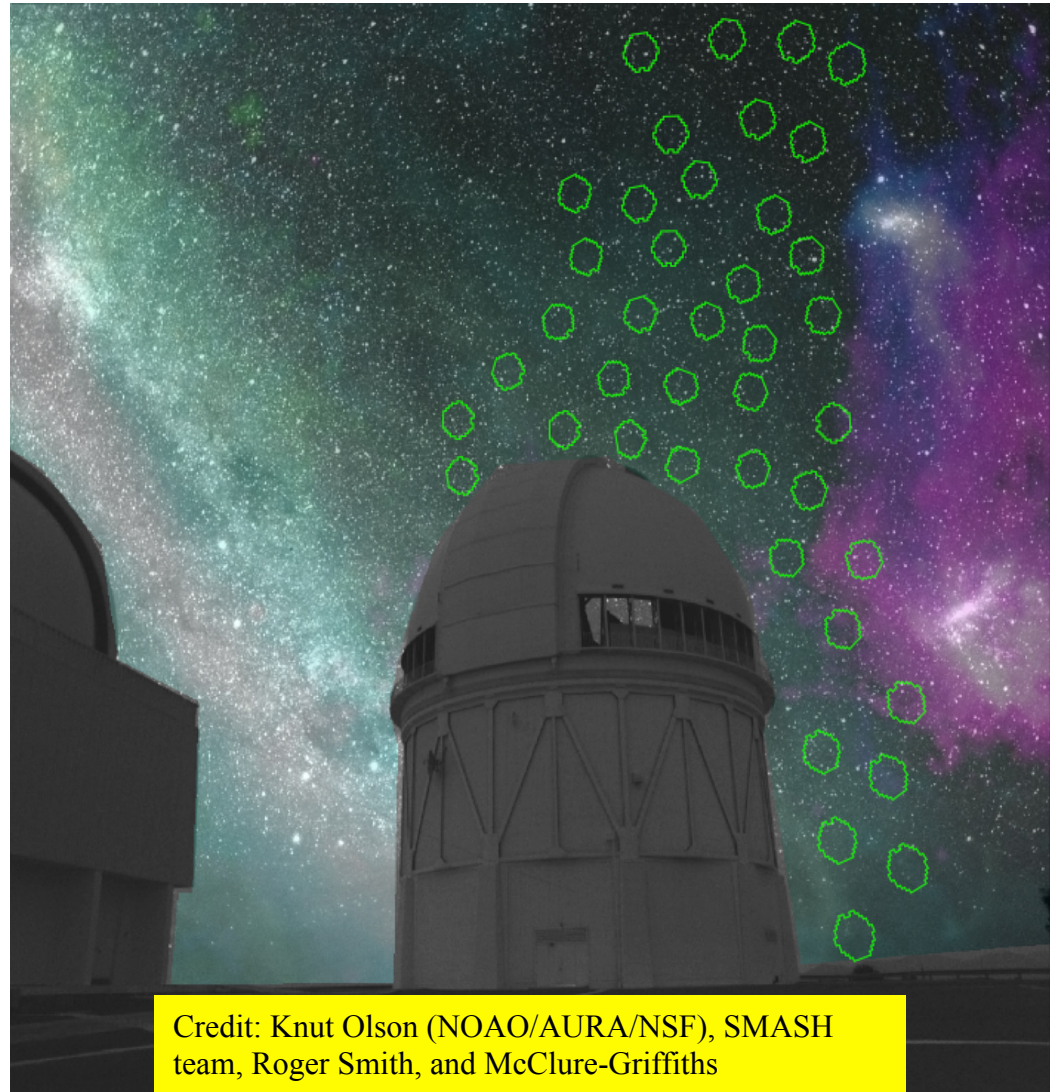
- Top-level science objectives:
 - Image dust-continuum emission from evolving galaxies as early as 500Myr after the Big Bang ($z \sim 10$).
 - Determine the chemical composition and dynamics of star-forming gas in normal galaxies like the Milky Way but $\frac{3}{4}$ of the way across the Universe ($z \sim 3$).
 - Measure the gas kinematics in young disks in nearby molecular clouds and detect the tidal gaps induced by planet formation.
- Construction completed; 1600 proposals at Cycle 3 call opened.





The Local Group, with DECam at CTIO

- SMASH=Survey of the Magellanic Stellar History
 - Identified stars belonging to the LMC at 20 deg. (17 kpc) from the LMC (Nidever et al., January AAS)
 - Left-over debris from formation and interaction
- Recent discoveries of numerous dwarf galaxies in Local Group



Credit: Knut Olson (NOAO/AURA/NSF), SMASH team, Roger Smith, and McClure-Griffiths



FY 2015 Budget for AST

- Approved budget plan is the same as the FY 2015 “Budget Estimates” given in the FY 2016 request, and presented to AAAC in February
 - LSST and DKIST construction are fully funded at the request levels of \$79.64 million and \$25.12 million, respectively
 - AST increase relative to FY 2014 was 2.4% to \$244.16 million, compared to 2.7% overall for NSF R&RA account
 - Highlights for AST in **FY 2015**
 - First year of DKIST operations ramp, increase in ALMA ops
 - Expect to hold AAG steady, or increase \$1-2 million from FY 2014
 - MSIP held relatively steady (down \$1 million from FY 2014, as planned)



FY 2016 Budget Request

- The President's Budget Request for NSF is for an overall increase of 5.2% for NSF, with a 4.3% increase over FY 2015 in Research and Related Activities
 - MPS (+2.2%) and AST (+1.0%) do less well than other parts of NSF
 - LSST and DKIST construction continue to be funded fully, at \$99.67 million and \$20.00 million, respectively
 - Overall Budget Request is well above the discretionary spending levels set by the Budget Control Act ("sequestration")



Status of FY 2016 Appropriations

- House Appropriations Committee passed bill that provides increase of 0.7% in NSF budget from FY 2015, compared to President's request for 5.2% increase
- Senate Appropriations Subcommittee overseeing NASA and NSF was provided increase of 0.14% over FY 2015
- Overall House and Senate funding levels for non-defense discretionary spending are 7% lower than President's Budget Request, consistent with Budget Control Act
- White House has stated that any appropriations bills that are part of an overall spending plan that adheres to the Budget Control Act will be vetoed



America COMPETES

- Re-authorization bill for NSF (also NIST, OSTP, DOE), H.R. 1806, has been passed by the House
 - Specific authorization levels are set for individual NSF Directorates
- Office of Management and Budget has issued a Statement of Administration Policy indicating concerns about HR 1806
 - “If the President were presented with H.R. 1806, his senior advisors would recommend that he veto the bill.”



AAAC 2015 Recommendations-1

- Next-generation (Stage IV) CMB polarization planning
 - AST funded two CMB polarization proposals in first MSIP round
 - AST and DOE are talking; AST prefers to await results of mid-decadal survey
- Pursue partnerships, use Principles for Access
 - Guidelines for partners in LSST operations are consistent with Principles
 - Principles explicit in NASA/NSF MOU on NN-EXPLORE



AAAC 2015 Recommendations-2

- “Vigorous activities toward divestments recommended by the Portfolio Review should continue”
 - AST agrees, and continues “vigorous activities.”
 - Summary in NSF 15-044, published on March 4.
 - Some success stories have been achieved, and we expect more in the next 1-2 years. Examples are the NN-EXPLORE project on WIYN, and DESI planned for Mayall Telescope
 - Individual scientists and stakeholders are exercising their constitutional right to advocate in favor of continuation of facilities that are of interest to them.



Divestment Status


(as of May 29, 2015)

Telescope	Status
KPNO 2.1m	Open ops ended; selection of new operator has been made
Mayall 4m	Slated for DESI, pending DOE funding; bridge from NSF
WIYN 3.5m	NOAO share to NASA-NSF Exoplanet Research Program
GBT	Partner discussions in progress; engineering study under way
VLBA	Partner discussions in progress; engineering study under way
McMath-Pierce	Bridge to university-led consortium? engineering study under way
GONG/SOLIS	SOLIS moved off Kitt Peak; GONG requests in FY 2016 budget
Dunn Solar Tel.	Engineering study under way; partner meetings in NM, 5/27-28
Arecibo	Post-2016 status in discussion; engineering study under way
SOAR	Post-2018 status to be reviewed



AAAC 2015 Recommendations-3

- Agencies and Congress recognize the important role of basic research and special contributions that astronomy and astrophysics can offer
 - AST agrees, and makes this point as appropriate
- “Clarify and quantify the underlying factors contributing to the declining success rate seen at NASA and NSF, and develop data-driven ideas for managing the problem.”
 - AST has provided much data to AAAC, and to AST Committee of Visitors (COV). COV has recommended “broad latitude to test and implement changes”



NOIR System Study—General Comments

- AST thanks the Committee for its thoughtful work and guidance
- Specific responses to recommendations often will be dependent on future budgets, and so only conditional responses can be given at this time
- Recommendations for a strong central community coordination role for NOAO are an appropriate role, and are under discussion with NOAO
 - The recommended activities are beyond the scope of the transformed NOAO that is being funded by NSF starting in FY 2016, with the increased emphasis on Data Science
 - Augmentations to NOAO's budget and scope would be required



Break in Presentation



OIR System Recommendations-1

- R1: Direct NOAO to administer telescope-time exchange system
 - Under discussion with NOAO
 - First, need data on who wants to offer time in marketplace
 - Probably needs injection of capital to succeed
 - TSIP experience indicates that long-term commitments and stability may be most important to community
- R2: NOAO to lead community-wide planning process and facilitate System organizing committee. NSF would solicit proposals to meet prioritized capabilities.
 - A natural role for NOAO
 - Relation to MSIP?



OIR System Recommendations-2

- R3: Wide-field highly multiplexed spectroscopic capability
 - Community working group (R2) needed to define highest priority science case and instrument requirements.
- R4a: Support development of event brokers for LSST
 - AST is funding several projects along these lines
 - Zwicky Transient Facility through MSIP
 - INSPIRE grant: Joint UA-NOAO
 - Special instance of the more global issue of development of Level 3 data products for LSST
- R4b: Position Gemini-S for faint object spectroscopy early in era of LSST operations
 - Gen 4#3 instrument for Gemini may meet this recommendation



OIR System Recommendations-3

- R4c: Ensure that OIR system time can be allocated for faint transient observations prioritized by LSST event broker
 - AST is in discussion with Gemini partners, also NOAO
- R4d: Enhance coordination among federal telescopes in Southern Hemisphere to optimize LSST follow-up
 - Under discussion with NOAO and Gemini partners
 - Should not ignore Mauna Kea and Kitt Peak
 - “Follow up” should mean coordination for “a range of studies,” not just transient sources



OIR System Recommendations-4

- R5: Plan for an investment in one or both GSMTs
- R6: Continue to invest in development of critical technologies, including AO and precision RV
 - Balance between MSIP and ATI is under active discussion
 - Precision RV is a goal of NN-EXPLORE
- R7: Coordinated suite of schools, workshops, and training networks for training in instrumentation, software, and data analysis
 - Is this adequate for maintaining instrumentation expertise?