



# NAASC Status

Anthony Remijan – NA ARC Manager

Phil Jewell – AD NA ALMA Operations

ANASAC f2f Meeting – 31 May 2017



# NAASC Status

## Outline

- Review of NAASC Scientific and Technical Goals – 2016
- NAASC Goals for 2017 - Data! Communication! Science!
- Evolution of the NAASC Organizational Structure
  - Staffing and Recruitment Changes
- NAASC Team Structure Review
  - Roles and Responsibilities
- Review of Cycle 3 and Current State of Cycle 4
  - Next 180 days...
- JAO/NA ARC Joint Issues
- Planning for FY18 and beyond

# NAASC Status - 2016

- NAASC Scientific and Technical Goals
  - Provide better/enhanced data products to the PI. Requires careful review of the observing setup and expertise in data reduction and imaging – **ONGOING - Continue to deliver calibrated .ms, accepted the ADMIT software suite.**
  - Commission and deliver the Imaging Pipeline – **DONE!**
  - Provide/Improve the communication with the JAO on the identification of problems with the array or with a single antenna or subsystem – **ONGOING (and going well...)**
  - Continue to expand the ALMA user base beyond radio interferometry experts - **PENDING**
  - Put the data in the hands of the PIs faster and more efficiently. – **ONGOING – We are keeping up with the data collection and we do not have a backlog.**

# NAASC Status

- Data! Communication! Science!
  - Deliver data to the community within 30 days from the last completed execution for standard modes (45 days for non-standard modes). Will require an extensive investigation and improvement in data processing workflow (DPTT presentation)
  - Improve the “lateral” communication between team leads/members within the NA ARC. Improve the lateral communication between ALMA-wide subsystem scientists.
  - Provide the scientific staff within the NA ARC as well as NRAO ISMs in Chile additional opportunities to better enable their science (Science Leave; science “flex time”; funding for more science travel. Offer more opportunities for non-scientific staff to pursue scientific endeavors (NA DA Office specifically)

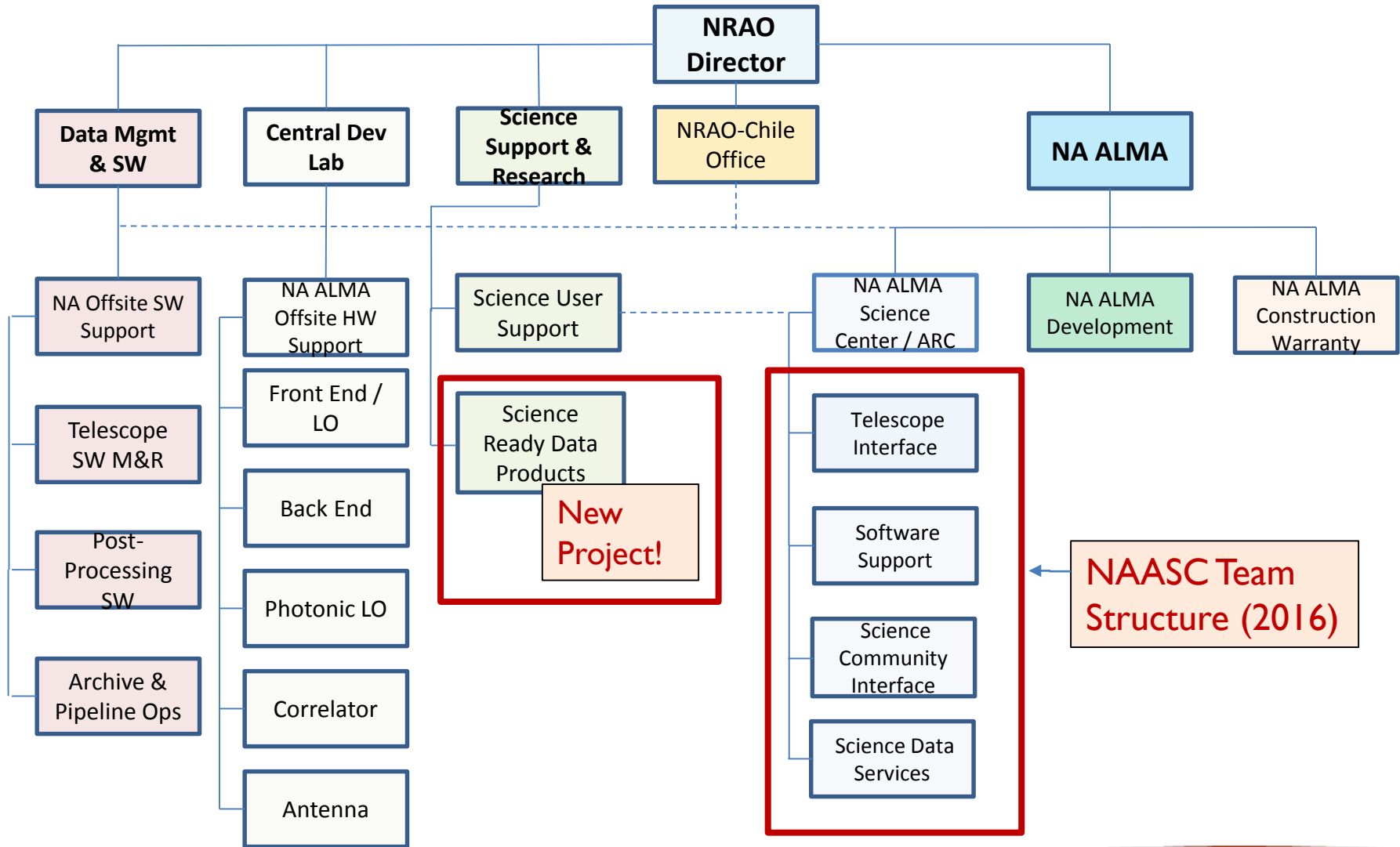
# NAASC Status

## Staffing Changes

- Key Departures:
  - Alison Peck – Gemini
  - Eric Murphy – ngVLA
  - *Rachel Harrison – University of Illinois (Aug 2017)*
- Key Additions:
  - Katelyn Sevin – NA ARC Administrative Assistant
  - Catherine Vlahakis – Telescope Interface and Diagnostics Team Lead
  - Amanda Kepley – Scientific Software Support Team
  - Shawn (Tom) Booth – Scientific Data Analyst I
  - Melissa Hoffman - Scientific Data Analyst I
  - *Andrew Lipnicki - Scientific Data Analyst I (Aug 2017)*
  - *Rachel Friesen – Community Support and Outreach Team (Aug 2017)*
- Key Delays:
  - None
- Management Changes:
  - None

# NA ALMA Organization

## Including NRAO Department Interaction



# NA ALMA Science Operations – May 2017

## Team Level

Team Leads do not have direct line management

ARC Manager is responsible for coordination and prioritization of team tasks.

Names in *italics* have direct line reports outside of the NAASC.

AD NA ALMA Operations  
**Phil Jewell**

Administrative  
Assistant  
**Katelyn Sevin**

NA ARC MANAGER  
**Anthony Remijan**

Telescope Interface and  
Diagnostic Team  
**Lead (Vlahakis)**

### Members

**Hunter**  
(Pipeline Heuristic  
Lead)  
**Simon**  
(P2G Lead)  
**Fomalont**  
**Liszt**  
*Schieven*  
*DiFrancesco*

ALMA Software Support  
and Testing Team  
**Lead (Mason)**

### Members

**Hibbard**  
(Pipeline SSS)  
**Brogan**  
(Imaging Pipeline  
Lead/CASA SSS/Dep  
Program Scientist)  
**Donovan Meyer**  
(CASA Scientific Testing  
Lead)  
**Indebetouw**  
(Pipeline Heuristics and  
Deployment Manager)  
**Kepley**  
**McNichols**  
**Harrison**  
**Yoon**

Science Community Interface  
Team  
**Lead (Stierwalt)**

### Members

**Braatz**  
(Contact Scientist Lead)  
**Evans**  
(Science Portal SSS)  
**Wooten**  
(ALMA Program  
Scientist/Development  
Program Lead)  
**Wood**  
(Dep ALMA Helpdesk SSS)  
**Remijan**  
(ALMA Helpdesk SSS)  
**Keller**  
**Kirk**  
**Friesen (01 Aug 2017)**

Science Data Services and  
Archive Team  
**Lead/DRM (Lacy)**

### Members

**Mangum**  
**Kunneriath**  
(Data Reduction Manager)  
**Ubach**  
(Data Analyst Team  
Manager/Data Reduction  
Manager)  
**Moulet**  
**Kim**  
**Fisher**  
**Thornley**  
**Nance**  
**Booth**  
**Hoffman**  
**Lipnicki (Aug 2017)**  
*Matthews*

# Teams - Roles and Responsibilities

- Telescope Interface and Diagnostics Team: **Catherine Vlahakis**
  - AoD shifts
  - QA2 diagnostics
  - Technical & Diagnostic Liaison to the JAO
  - P2G Work
  - EOC Work and Activities
- ALMA Software Support & Testing Team: **Brian Mason**
  - Tools and Algorithm development
  - CASA Support and testing
  - Software testing for NA – Scientific Input (Phase C)
  - Overall software requirements processes improvements
- Science Data Services and Archive Team: **Mark Lacy**
  - ALMA archive improvements and deployment testing (Phase B) including Archive cognizant lead work
  - ALMA Quality assurance review (QA2) and interface with AQUA and other JAO quality evaluation tools
  - PI Data reduction and Imaging including Pipeline processing
  - LUSTRE access including external access and management of users to the NRAO cluster
  - Enhanced Data Products (e.g. calibrated .ms)
- Science Community Interface Team: **Sabrina Stierwalt**
  - NAASC Community Day events
  - Coordination with the ODI on diversity initiatives and broadening participation
  - Coordination with the EPO and Science Communication offices
  - Science web and ALMA Science portal improvements, enhancements and review.
  - Helpdesk/Forums management and oversight
  - Contact scientist support and oversight
  - End user documentation
  - Face-to-face visitor support including data reduction visitors, visiting scientists and sabbatical visits.
  - ALMA Ambassadors!

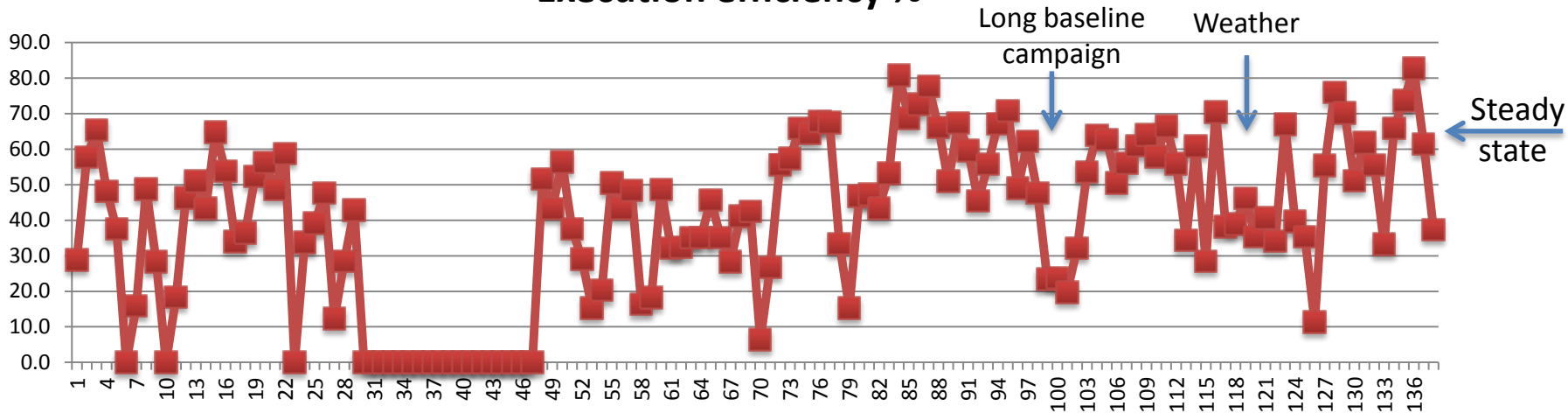


# Cycle 3 Completion (based on QA0 and QA2)

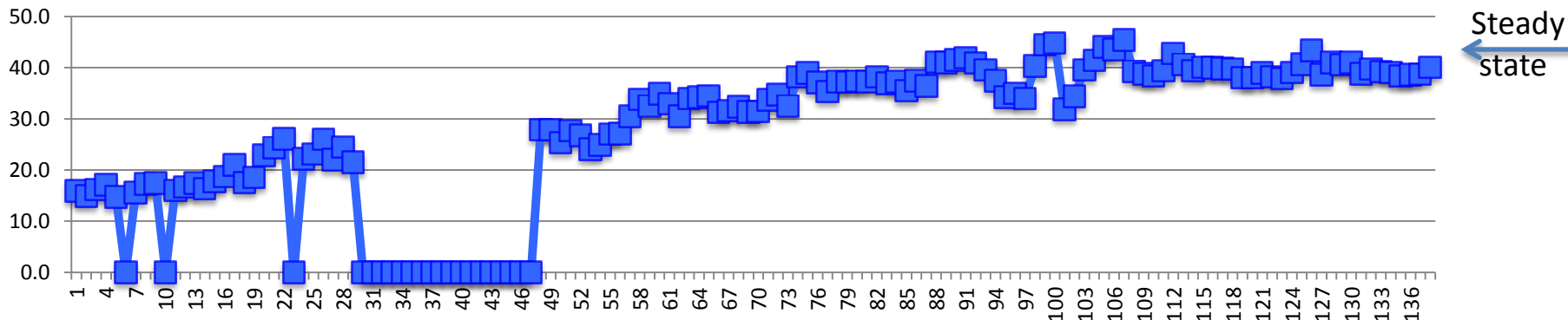
- ~ 2600h of successful executions with the 12-m array (compared to 2100h offered)
- Grade A and II DDT projects:
  - Completed projects: 71 out of 111 (64.0 %)
  - Partially completed: 32 (28.8 %)
  - Not observed: 8 (7.2%)
- Grade B projects:
  - Completed projects: 183 out of 284 (64.4 %)
  - Partially completed: 72 (25.4 %)
  - Not observed: 29 (10.2%)
- Grade C projects:
  - Completed projects: 98
  - Partially completed: 83
  - An unusually large number of grade C projects were observed due to the marginal weather conditions during Cycle 3.

# Observing efficiencies of the 12-m Array

## Execution efficiency %



## Average number of antennas



← Cycle 0: Sep 2011-Dec 2012; Cycle 1: Jan 2013 - May 2014; Cycle 2: June 2014 – Sep 2015; Cycle 3: Oct 2015-Sep2016 →

# Start of Cycle 4

- Scheduling exercise and queue building took place before the start of Cycle 4. Fully allocated all the available time including C-ranked fillers.
  - In Cycle 3, there was an issue with not having enough observing programs (including C-ranked) to fill the configuration schedule. We were “chasing arrays” to fill in the gaps.
- Phase 2 PI submission of SBs happened between 15 Aug – 15 Sept. This was largely a success and the OT worked well. However, was largely deemed unnecessary and often confusing to PIs looking at the SBs (which they could not change).
  - Still an issue chasing the PIs to approve their SGs.
  - P2G had little time to set all the SBs to “Ready” for the start of the Cycle.
- Significant improvements in the scheduler.
  - Need to reduce the amount of QA2\_FAIL or SEMIPASS data delivered because of angular resolution. Improvements to the scheduler would better ensure that the program is observed during the correct configuration.
- Successful start
  - For the first time, the Cycle started EARLY! This was a great success for the engineering, computing and science teams.

# Cycle 4 SB Completion Statistics (PRELIMINARY)

- A-ranked SBs (excluding C40-7, 8 and 9)
  - Fully observed: 313 (49.5%)
  - Ready: 92 (14.5%)
  - Suspended: 17 (2.7%)
  - Waiting: 10 (1.6%)
- B-ranked SBs (excluding C40-7, 8 and 9)
  - Fully observed: 631 (39.9%)
  - Ready: 259 (16.4%)
  - Suspended: 11 (0.7%)
  - Waiting: 79 (5.0%)
- C-ranked SBs (excluding C40-7, 8 and 9)
  - Fully observed: 410 (32.3%)
  - Ready: 541 (42.7%)
  - Suspended: 1 (0.1%)
  - Waiting: 9 (0.7%)

# Cycle 4 Project Completion Statistics (PRELIMINARY)

- **A-ranked Projects**
  - Delivered: 40 (27%)
  - Fully Observed: 16 (11%)
  - Partially Observed: 18 (12%)
  - Phase 2 Submitted: 19 (13%)
  - Ready: 24 (16%)
- **B-ranked Projects**
  - Delivered: 72 (21%)
  - Fully Observed: 28 (8%)
  - Partially Observed: 47 (14%)
  - Phase 2 Submitted: 44 (13%)
  - Ready: 75 (22%)
- **C-ranked Projects**
  - Delivered: 27 (11%)
  - Fully Observed: 8 (3%)
  - Partially Observed: 38 (16%)
  - Phase 2 Submitted: 21 (9%)
  - Ready: 93 (39%)

# Next 180 Days/Future

- Cycle 5 Preparations
  - 15 June – Cycle 5 OFFLINE acceptance
  - 19 - 23 June - APR/APRC Meeting in Antwerp, Belgium
  - Late July – ALMA Disposition Letters sent to PIs; ONLINE software acceptance
  - Aug – End-to-end tests – Test report due in Sept.
- Cycle 4 Observations (updated at: <https://almascience.nrao.edu/observing/alma-status-pag>)
  - May – Complete observations in C40-5 -> Begin move to Long Baselines
  - May/June – Heavy involvement by NAASC staff in EOC activities and PI preparations for Long Baselines.
  - Jun – Move to C40-9
  - July – Move to C40-8
  - Aug – Move to C40-7
- Data Reduction & Delivery
  - Ongoing – between 10 and 15 staff working on pipeline-assisted imaging or manual reductions
- CASA and Pipeline Testing
  - June/July – Heuristic feature completeness tests; Phase B testing
  - Aug – New observing modes testing; CASA Cycle 5 pipeline candidate released 15 Aug; Phase C testing
  - 01 Sept – CASA Release
  - Sept – JAO/ARCs pipeline deployment tests
- Community Science Outreach
  - June - NA ARC mini-presentations at the June AAS; Women in Astronomy IV
  - July – Joint ALMA/VLA Community Event hosted by Cornell University on July 10 and 11, 2017
  - Aug - Cycle 6 documentation review and initial documentation preparation.
  - 05 Aug – 07 Sept – PI review of Phase 2 Scheduling Blocks; Bulk generation of SBs by P2G
- ALMA Development Program
  - Anything?

# JAO/NA ARC Issues

## Data Delivery/Product Improvements:

- Still have the goal of delivering data products to the PI faster. Efforts from the Data Processing Tiger Team (Lacy/Mason) have started this process.
- The new Science Ready Data Products (Kern - UC) Project will focus on the enhancement of our pipeline products, improved archive access and reprocessing of ALMA data products
  - *Plans and priorities on how SRDP will interface with the NA ARC teams are under discussion.*

## New Capabilities – Full Operations in Cycle 7:

- For ALMA to be considered under “Full Operations” (Cycle 7), the following list of capabilities will need to be demonstrated (Vlahakis):
  - Differential Circular (V) Polarization capabilities (and various derivatives)
  - Wide-field Polarization
  - Continuum Single Dish
  - High Frequency Single Dish
  - Long Baselines with higher frequencies (ie. > Band 7)
  - Repeatable precision observations
- This may require significant community involvement to offer within 2 years.  
*How do we get that effort to realize full ALMA operations?*

# JAO/NA ARC Issues - continued

## Community Involvement:

- *What is the most efficient and effective way to continue to expand the user base of ALMA beyond the radio? (Stierwalt)*
  - Joint observing program(s) – JWST/SOFIA?
  - Community education and outreach – ALMA Ambassadors
  - Student/Postdoc/Sabbatical Programs
- Scientific Community Involvement
  - No US based conferences are planned to be hosted by the NAASC until ~2020.
    - Feb 2018 – Taiwan Conference on Magnetic Fields and Turbulence
    - April/May 2019 – NRC Conference (New Horizons in Solar Systems)
    - *Lack of ANASAC support/poor attendance despite major efforts to advertise and provide participant support – ideas?*
- **ASIDE:** NAASC Staff are actively participating in LOCAL community outreach (e.g. blood drives, food drives and providing support for homeless shelters, local science fair events, etc...)



# Staff Planning for FY18 and Beyond

## NA Data Analyst Office:

- Analyst effort should ramp down between 3 – 5 years. Several are on short term contracts (~2 years) and others are pursuing other avenues (Grad school, industry, etc...).
- Developing a focused professional development program.
- Several could transition to SRDP.

## Functional Postdocs:

- Discussion on adding functional postdocs stopped now that Jansky fellows are afforded up to 25% of their time for functional work. Will start incorporating the Janskys more into NA ARC operations.



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