ALMA Opportunities & Status

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Presentation Outline

- JAO & Chile Status
- Current Return-to-Operations Status
  - Observing restart
  - Return to Cycle 7 Observing
- NA ALMA Call for Development Projects
- ALMA "Cycle 8 2021"
  - Timeline
  - Changes
  - New Capabilities
- NAASC Community Support
  - Support for Conferences & Workshops
  - SOS Program for Archival Research – New!
  - Data Reduction, Proposal, Publication, and Helpdesk Support
- Summary

JAO & Chile Status

- ALMA suspended operations for the pandemic on March 22
  - OSF powered down, Santiago office closed, JAO staff begin working from home
- National state of emergency declared, followed by hard lockdowns & curfews
- Throughout the pandemic suspension, a JAO caretaker team, based in San Pedro, monitored the ALMA site (OSF & AOS) daily
- Return to operations for ALMA was logistically complicated owing to the remote location of the site – required air & bus travel, on-site lodging and food service, and the mandated health requirements in case of COVID outbreak
- By Aug / Sep, coronavirus case metrics begin to stabilize in & national reopening progressed in most regions
- OSF restart began in early October

Return to Operations Status

- Return to Operations phases have proceeded extremely well
  - OSF reopening completed smoothly
  - First AOS restart phase completed
    - Included successful restart of key instruments -- Baseline (12m) and Compact Array Correlators, Central Local Oscillator
  - Now in AOS Phase II – restart of antennas

- First test observing will begin after ~10 antennas active

- Brief (3 wk) February shutdown planned to address deferred maintenance
  - Altiplanic winter has already begun (the first snows have fallen at the AOS)

- Resumption of Cycle 7 science observing is dependent on restart progress, but is currently expected by late March

ALMA Development Roadmap

ALMA Development Roadmap

- Completed in 2018 -- identifies science goals & technical development priorities for the decade of the 2020s to keep ALMA at forefront of scientific discovery
  - https://www.almaobservatory.org/en/publications/the-alma-development-roadmap/

Highest priority next 5-10 years [Work already underway]

- Improve receiver sensitivity [currently 4-10x quantum limit]
- Increase ALMA's bandwidth by at least 2x [receivers, digital transmission system, correlator]
- Improve usability of science archive – increase science return

High priority for next decade [Studies underway]

- Extend baselines 2-3x
- Increase collecting area (more antennas)
  - Critical for spectral line sensitivity
- Focal-plane arrays
- 25-m class single dish

NA ALMA Cycle 9 Call for Development Project Proposals

https://science.nrao.edu/facilities/alma/science_sustainability/NADevelopmentProgram

- Important Dates:
  - Call: 15 Jan 2021
  - Notice of Intent: 1 March 2021 (Mandatory, but non-binding)
  - Deadline: 9 April 2021
- Terms:
  - Alignment with Development Roadmap encouraged
    - Includes 2nd Generation Correlator, upgrades to receivers in priority bands, improvement to archival research
  - Multi-year period of performance
  - Program budget profile expected: $5M/yr, with possible carryover augmentations
- Evaluation Schedule
  - NA proposal down-select: 15 June 2021
  - Evaluation by ALMA Board: 10 Nov 2021
- Full details will be released with the CfP

ALMA "Cycle 8 2021" – Timeline, Changes and New Capabilities

https://almascience.nrao.edu/news/alma-cycle-8-2021-pre-announcement

- ALMA Cycle 8 2021 will start in October 2021
- Anticipates having 4300 hours for approved science observations on the 12-m Array and 3000 hours on the ACA
- The key dates (anticipated) for Cycle 8 2021 are:

Date	Milestone
17 December 2020	Cycle 8 2021 pre-announcement
17 March 2021	**Release of the ALMA Cycle 8 2021 CfP and Observing Tool, and opening of archive for proposal submission**
21 April 2021	**Proposal submission deadline @ 15UT**
August 2021	Results of the proposal review sent to proposers
8 September 2021	ACA Supplemental Call for Proposals released, and opening of archive for proposal submission
1 October 2021	Start of Cycle 8 2021 observations
6 October 2021	Cycle 8 2021 Supplemental Call deadline

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- **New in Cycle 8 2021**
  - Solar observations in Band 5
  - A passive-phasing mode
    - fainter VLBI targets (Bands 3 and 6 - flux density < 500 mJy @1km)
    - ALMA-only mode primarily for observations of pulsars (Band 3).
  - High frequency observations (Bands 9 and 10) with the stand-alone 7-m Array
  - Mosaicking of continuum linear polarization observations (Bands 3 to 7) with the 12-m Array
  - Spectral scans with the 7-m Array
  - Up to a total of 75 hours of full polarization (on-axis linear) observations of a single field with the 7-m Array in stand-alone mode at the Main Call only

ALMA "Cycle 8 2021" – Timeline, Changes and New Capabilities

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- **Updates to the Proposal Review Process**
  - All Cycle 8 2021 proposals will be reviewed using a dual anonymous procedure
  - ALMA will adopt a distributed peer review process for scientific review of most proposals submitted to Cycle 8 2021
    - all proposals requesting less than 25 hours on the 12-m Array, and ACA stand-alone proposals requesting less than 150 hours on the 7-m Array.
    - the PI (or one of the delegated co-Is) will be responsible for reviewing up to 10 other submitted proposals.
  - Large proposals and proposals requesting 25 hours or more on the 12-m Array will be reviewed by science review panels
    - ALMA encourages PIs to submit larger, more ambitious proposals!
    - Therefore, there is no longer a cap on the total time that can be allocated to Large Programs

At the NAASC, we continue to support the NA community in their use of ALMA data.

- We are continuing to move forward virtually on the following initiatives:
  - **NAASC support for conferences and workshops: Applications are now open!** We highly encourage applications for virtual/hybrid/f2f meetings and proposals on how to best use the NAASC funding in such cases. More information is available at: https://science.nrao.edu/facilities/alma/NAASC-Conference-and-Workshop-Support.
  - **ALMA SOS Program for archive investigations:** Coming after the ALMA proposal deadline, researchers can apply for student funding to mine the ALMA archive for breakthrough science! Stay tuned for more information…

At the NAASC, we continue to support the NA community in their use of ALMA data.

- We are continuing to move forward virtually on the following initiatives:
  - **Data Reduction, Proposal Preparation and Science Support - Virtual f2f visits are OPEN!** During these unusual times, the NAASC is providing virtual f2f visits. For more information and to request a visit, please see https://science.nrao.edu/facilities/alma/visitors-shortterm and submit a ticket to the face-to-face visits department of the ALMA Helpdesk.
    - Watch for the upcoming Proposal Preparation workshops by our 2021 ALMA Ambassadors!
  - **ALMA Helpdesk Support – is always open.** Submit a HD ticket and get a reply within 24 hours. And, 3 days before the ALMA submission deadline, get 24-hour support for proposal submission questions – https://help.almascience.org/

Summary and Going Forward…

- **All NAASC and ALMA staff are fully committed to support the science community as best we can.**
- ALMA is returning to operation now – projected resumption of Cycle 7 science observing in 2-3 months (pandemic, etc., allowing)
- NA ALMA Call for Development Projects to be issued on 15 January, in support of the ALMA Development Roadmap
- We will continue to hold virtual f2f visits – and afford open access to the science community to use our lustre system for data processing
- We will attempt to run larger meetings and workshops virtually – either general meetings such as the SISS and/or focused topical meetings. Please contact the NAASC for financial support for meetings and workshops.
- We anticipate an archival SOS call for proposals in April 2021
- Continue to want your feedback (and support) for the work that we are doing (or can do).
- Stay healthy. Stay Safe.

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