NRAO eNews

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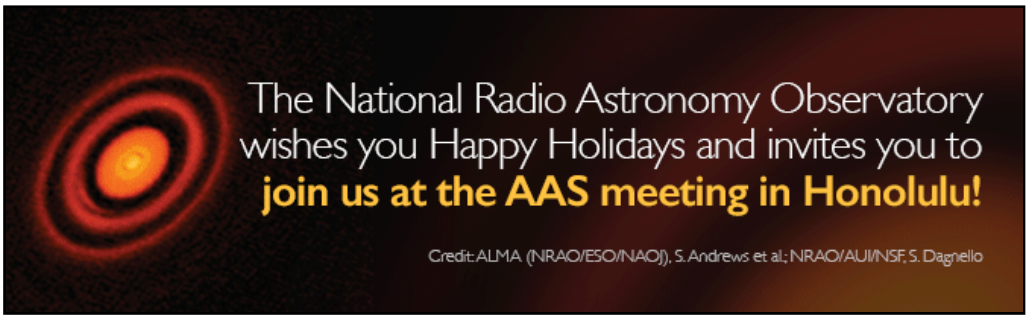


Upcoming Events

NRAO at the Honolulu AAS

Monday, January 6, 2020

2:00 - 3:30pm	Breakthrough Science with the Atacama Large Millimeter/submillimeter Array (https://science.nrao.edu/science/meetings/2020/aas235/breakthrough-science)
5:00 - 6:30pm	NAASC Ice Cream Social at the NRAO Exhibit

Tuesday, January 7, 2020

9:30 - 10:30am	The Scientific Quest for High Angular Resolution (poster) (https://science.nrao.edu/science/meetings/2020/aas235/the-scientific-quest-for-high-angular-resolution)
2:00 - 3:30pm	The Scientific Quest for High Angular Resolution (oral) (https://science.nrao.edu/science/meetings/2020/aas235/the-scientific-quest-for-high-angular-resolution)
5:30 - 6:30pm	The Scientific Quest for High Angular Resolution (poster) (https://science.nrao.edu/science/meetings/2020/aas235/the-scientific-quest-for-high-angular-resolution)
6:30 - 8:30pm	NRAO Town Hall (https://science.nrao.edu/science/meetings/2020/aas235/nrao-town-hall)

Space VLBI 2020: Science and Technology Futures (https://go.nrao.edu/SpaceVLBI2020)
Jan 28 - 30, 2020 | Charlottesville, VA

The ALMA 2030 Vision: Design Considerations for the Next ALMA Correlator (https://go.nrao.edu/ngALMACorrelator)
Feb 11 - 13, 2020 | Charlottesville, VA

Detecting Extraterrestrial Technologies and Life (https://science.nrao.edu/science/meetings/2020/aaas/detecting-extraterrestrial-technologies-and-life)
Feb 15, 2020 | Seattle, WA

35th New Mexico Symposium (http://www.aoc.nrao.edu/events/nmsymposium/2019/)
Feb 21, 2020 | Socorro, NM

Jansky Lecture: Dr. Anneila Sargent (https://science.nrao.edu/science/jansky-lecture/speakers/2019-jansky-lecturer-dr-anneila-sargent)
Feb 21, 2020 | Socorro, NM

The ALMA 2030 Vision: Design considerations for Digitizers, Backend and Data Transmission System (https://alma-intweb.mtk.nao.ac.jp/~diono/meetings/ALMA2030_Mitaka/)
Mar 11 - 13, 2020 | Mitaka, Japan

17th Synthesis Imaging Workshop (http://www.cvent.com/events/17th-synthesis-imaging-workshop/event-summary-0d59eb6cd1474978bce811194b2ff961.aspx)
May 13 - 20, 2020 | Socorro, NM

Compact Objects and Energetic Phenomena in the Multi-Messenger Era (http://go.nrao.edu/ngvla20)
Jul 14 - 16, 2020 | Saint Paul, MN

Semester 2020A Proposal Outcomes

The NRAO has completed the Semester 2020A proposal review and time allocation process (https://science.nrao.edu/observing/proposal-types/peta) for the Very Large Array (VLA) (https://science.nrao.edu/facilities/evla) and the Very Long Baseline Array (VLBA) (https://science.nrao.edu/facilities/vlba).

For the VLA, the B and C-configurations will be available in the 2020A semester and 193 new proposals were received by the 1 August 2019 submission deadline, including three large and twenty-eight time critical (triggered) proposals. The oversubscription rate (by proposal number) was 1.9 and the proposal pressure (hours requested over hours available) was 2.0, both of which are similar to recent semesters.

For the VLBA 33 new proposals were submitted. The oversubscription rate was 1.8 and the proposal pressure was 2.3, both of which are similar to recent semesters.

There was significant demand for the time made available on space observatories through inter-observatory agreements, and seventeen proposals requesting time on HST, Swift, or XMM-Newton (together with AUI/NRAO telescope time) were submitted.

The proposals were reviewed for scientific merit by nine Science Review Panels (SRPs) and for technical feasibility by NRAO staff. These reviews were completed in August – September 2019 and then considered by the Time Allocation Committee (TAC) (https://science.nrao.edu/observing/proposal-types/time-allocation-committee) at a face-to-face meeting on 24-25 October 2019 in Charlottesville, Virginia. The TAC – comprising the 9 SRP chairs – was charged with recommending a science program for Semester 2020A to the Observatory Director. The recommended program was reviewed and approved on 7 November 2019.

Proposals submitted to the Green Bank Observatory (GBO) were assessed through the same process. Sixty-two proposals for the Green Bank Telescope (GBT) were received for the 2020A Semester, including three large proposals. The oversubscription rate was 3.1 and the proposal pressure was 2.0. For information on proposals for GBT observations see the GBO website (https://greenbankobservatory.org/science/gbt-observers/proposals/past-proposal-calls/2020a-results/) .

A disposition letter was sent to the Principal Investigator and Co-Investigators of each proposal on 13 November 2019 and a TAC report (https://science.nrao.edu/observing/proposal-types/tac-reports/20a-tac-report) containing information for proposers and observers, including statistics and telescope pressure plots, was released the same day. The approved science program (https://science.nrao.edu/science/science-program) for the VLA and the VLBA has been posted to the NRAO science website (http://science.nrao.edu/) . The authors, title, abstract, and scheduled hours for each approved proposal can be accessed from the Proposal Finder Tool (http://library.nrao.edu/proposals) .

The Student Observing Support program continues to be available for NRAO observing programs and we encourage Principal Investigators of highly-ranked VLA and VLBA proposals to consider applying for support.

The NRAO welcomes community feedback on the proposal review and time allocation process (https://science.nrao.edu/observing/proposal-types/proposal-review-system) . Please provide such feedback via the Proposal Review department of the NRAO Helpdesk (http://help.nrao.edu/)

ngVLA Project News

Eric Murphy

ngVLA Project Responds to Astro2020 Request for Information

In November, the next generation Very Large Array (ngVLA) Project responded to a request for information from the Astro2020 Panel on Radio, Millimeter and Submillimeter Observations from the Ground (https://www8.nationalacademies.org/pa/projectview.aspx?key=51770) . The Project anticipates that this 118-page response will eventually be posted publicly by Astro2020. The Project looks forward to an opportunity to present to the Panel early in the New Year.

The Scientific Quest for High Angular Resolution

On 7 January 2020, the NRAO and the ngVLA Project will convene a Special Session on *The Scientific Quest for High Angular Resolution* (https://science.nrao.edu/science/meetings/2020/aas235/the-scientific-quest-for-high-angular-resolution) at the American Astronomical Society winter meeting (https://aas.org/meetings/aas235) in Honolulu, Hawaii. This Special Session will highlight recent scientific breakthroughs enabled by imaging at high angular resolution. This Special Session's science program includes seven invited oral presentations and 24 contributed poster presentations.

Compact Objects and Energetic Phenomena in the Multi-Messenger Era

On 14-16 July 2020, the NRAO and the ngVLA Project will convene a science conference titled *Compact Objects and Energetic Phenomena inthe Multi-Messenger Era* (https://go.nrao.edu/ngvla20) in Saint Paul, Minnesota, USA. Registration and abstract submission have opened. Dr. Anne Kinney, head of the National Science Foundation's Directorate for Mathematical and Physical Sciences, will give a keynote talk to open the conference. Kinney is responsible for determining how the Directorate pursues NSF's ten Big Ideas for future investment. One of the Big Ideas, Windows on the Universe

(https://www.nsf.gov/news/special_reports/big_ideas/universe.jsp) , is focused on maturing the nascent field of multi-messenger astrophysics. A conference report has been commissioned by Nature Astronomy.

CASA Simulations of ngVLA Capabilities

The latest CASA Newsletter (https://science.nrao.edu/enews/casa_009/) highlights the essential role of CASA simulations in establishing and assessing ngVLA capabilities. This CASA News issue includes descriptions of the wide variety of simulations published to date. Access the CASA Guides (https://casaguides.nrao.edu/index.php/Simulating_ngVLA_Data-CASA5.4.1) to conduct your own simulations of ngVLA capabilities.

Low-pressure LSTs on the VLA: Exploratory DDT Proposals Encouraged

Claire Chandler

For the last few years, the VLA has seen consistently lower demand for Local Sidereal Times (LSTs) in the range of approximately 20 to 24 hours. This is true for the current D-configuration, as can be seen in the weekly plot of pressure vs. LST for projects in the dynamic queue (http://www.aoc.nrao.edu/~schedsoc/weekly_pressure_plot/pressure.png) . We are therefore expecting time at these LSTs to become available toward the end of the current D configuration, potentially continuing into semester 2020A.

To address this, we encourage the community to propose for Exploratory Director's Discretionary Time (https://science.nrao.edu/observing/proposal-types/exploratoryproposals) that can use this LST range. We particularly encourage proposals that can use X-band and lower frequencies as they are less vulnerable to bad weather, and these LSTs will move into the daytime during the spring windy season at the VLA site. Information about the capabilities available on the VLA, and how to propose, can be found at the Guide to Proposing for the VLA (https://science.nrao.edu/facilities/vla/docs/manuals/propvla) .

NAASC Conference & Workshop Support

Loreto Barcos-Muñoz

The North American ALMA Science Center (NAASC) has had a successful first round of applications for monetary and/or logistical support for Workshops and Conferences presenting synergies with ALMA, and those promoting diversity and inclusion.

The following are the workshops / meetings that were granted NAASC support. **SAVE THE DATES!**

Title	Location	Date(s)
Extreme Galactic Nuclear Activity – Ultraluminous Starbursts and AGN: A Symposium in Honor of Dave Sanders	Honolulu, HI, USA	9 January 2020

Title	Location	Date(s)
Gordon Research Seminar on Origins of Life	Galveston, TX, USA	18 – 19 January 2020
Quenching and Transformation Throughout Cosmic Time	Aspen Center for Physics, Aspen, CO, USA	8 – 13 February 2020
Ground and Space Observatories: A Joint Venture to Planetary Science (Planets2020)	Santiago, Chile	2 – 6 March 2020
From Collapsing Cores to Forming Disks: Fostering Connections Between Theory, Observation, and Chemistry	NRAO, Charlottesville, VA, USA	10 – 13 March 2020
ACS Symposium: Astrochemical Complexity in Planetary Systems	Philadelphia, PA, USA	22 – 26 March 2020
Multiphase Gas in Galaxy Groups	NRAO, Charlottesville, VA, USA	23 – 25 June 2020
The Aftermath of a Revolution: Planet Formation Five Years After HL Tau	Puerto Varas, Chile	7 – 11 December 2020

The NAASC will switch to a biannual call for applications starting in Spring 2020. Stay tuned!

For more information, visit the NAASC conference & workshop website (https://science.nrao.edu/facilities/alma/community1/NAASC-Conference-and-Workshop-Support) or contact us at naascinfo@nrao.edu (mailto:naascinfo@nrao.edu)

ALMA Program News

Al Wootten

Credit: Pablo Carrillo

View from Sairecabur past Licancabur toward the ALMA site.

Cycle 7 Observing

The current configuration is approximately C43-1 (0.16 km maximum baseline, 100 GHz beam 3.4 arcsec). ALMA is following a normal operations schedule as the southern summer begins.

Cycle 7 ACA Supplemental Call for Proposals

The deadline for the Atacama Compact Array (ACA) Supplemental Call for Proposals was 1 October. A total of 249 proposals was received, and the requested time exceeded that available (2500 hours on the 7-m array) by a factor of a few. The proposals were reviewed using a distributed peer review system (https://almascience.org/proposing/7m-array-supplemental-call) . Each team selected designated reviewers, resulting in 2490 assignments being made among 225 unique reviewers. Each of these reviewers received 30 or fewer proposals. PrincipaI Investigator notifications have been issued; successful proposals will enter the observing queue in January.

The ALMA2030 Vision: Design Considerations for the Next ALMA Correlator

A meeting to discuss considerations for the design of the next ALMA correlator (http://www.cvent.com/events/the-alma2030-vision-design-considerations-for-the-next-alma-correlator/event-summary-8c936ac86f8a4e51842644ae58e2d315.aspx) will be held in Charlottesville, Virginia, 11 – 13 February 2020. The deadline for abstract submission is 20 December 2019, which is also the deadline for requests for travel support. The final program will be announced 6 January 2020.

The purpose of this meeting is to bring together experts on the ALMA system and modern digital correlator design to: discuss design requirements for the next generation ALMA correlator that enables the ALMA2030 vision; share pros and cons of recent and currently-under-design correlator architectures; and identify challenges for implementing and deploying a new ALMA correlator.

Ultimately this meeting will encourage and inform the submission of viable designs for the next ALMA correlator in the near future.

Registration is open; visit the conference website (http://www.cvent.com/events/the-alma2030-vision-design-considerations-for-the-next-alma-correlator/event-summary-8c936ac86f8a4e51842644ae58e2d315.aspx) for confirmed speakers and further information.

The ALMA 2030 Vision: Design Considerations for Digitizers, Backend and Data Transmission System

Multiplication of the IF bandwidth (at least by a factor 2) is one of the main priorities for ALMA upgrades in the 2020s. This instantaneous bandwidth increase will be realized with the coordinated upgrade of receivers in the Front End, the correlators, and last but not least, all the electronics in-between: the digitizers, the backend and the Data Transmission System (DTS).

An ALMA 2030 Vision workshop (https://alma-intweb.mtk.nao.ac.jp/~diono/meetings/ALMA2030_Mitaka/) will be held at the National Astronomical Observatory of Japan (NAOJ) headquarters in Mitaka, Japan, 11 – 13 March 2020. This workshop will bring together experts on the ALMA system and digitizer, backend and DTS technologies, from within ALMA and the community, to:

1. discuss the status of technology and performance prospects for the next decade for digitizers, backend and DTS;
2. identify the impact on these subsystems due to the increase of the instantaneous bandwidth by a factor greater than two;
3. discuss the most suitable location of the 2nd generation ALMA correlators in relation with the status of DTS technologies;
4. identify off-the-shelf technologies that might be relevant to the implementation of the 2nd generation of ALMA digitizers, backend, and DTS; and
5. discuss possible system architectures to implement the multiplication of the IF bandwidth of ALMA by a factor of two or more.

We particularly encourage participation by young scientists, and a modest amount of travel support is available. Registration is now open.

Key Dates:

- 20 January 2020: Abstract deadline
- mid-February 2020: Program released

ALMA Science Sustainability

A Call for Proposals for ALMA Development Studies (https://science.nrao.edu/facilities/alma/science_sustainability/cycle8-cfs) was released 3 December 2019. The deadline for proposals is 1 May 2020 for funding during Fiscal Year 2021 — 1 October 2020 through 30 September 2021 — depending on the U.S. Federal budget process. We welcome any member from within the

North America ALMA Operations Partnership to submit a proposal to investigate a potential ALMA upgrade, particularly those which address goals of the ALMA2030 Development Plan (https://library.nrao.edu/public/memos/alma/main/memo612.pdf) , ALMA Memo 612.

AAS Special Session

On Monday 6 January, from 2:00 - 3:30 p.m., the NRAO will convene a Special Session *Breakthrough Science with the Atacama Large Millimeter/submillimeter Array* (https://science.nrao.edu/science/meetings/2020/aas235/breakthrough-science) featuring results from ALMA Large Programs and other related science at the American Astronomical Society (AAS) winter meeting in Honolulu, Hawaii. The speaker list includes: Sean Dougherty, Fabian Walter, Eva Schinnerer, Dan Marrone, Ilse Cleeves, and Sean Andrews.

ALMA Board News

At its November 2019 meeting in Germany, the ALMA Board reappointed Dr. Stephen White, Air Force Research Laboratory, to continue as ALMA Science Advisory Committee Chair and North American representative for the next year.

A Historic Note

Twenty-five years ago, in November 1994, the National Science Board approved a Project Development Plan for ALMA's predecessor, the Millimeter Meter Array, and endorsed further planning.

You Made a Discovery? We'll Make It News!

Iris Nijman

If you discover something newsworthy using one of NRAO's telescopes, our Education and Public Outreach (EPO) department is happy to work with you to bring public recognition to your result.

Our writers and visualizers are skilled and experienced at interpreting science for the public. They'll work with you directly to craft a story that will express the essence of your result in an accurate and approachable way. We have extensive distribution networks and an established reputation among science journalists as a dependable source of newsworthy stories.

Our Public Information Officers are your points-of-contact:
For VLA & VLBA: Dave Finley, Socorro – dfinley@nrao.edu | +1-575-835-7302
For ALMA & NRAO: Iris Nijman, Charlottesville – inijman@nrao.edu | +1-434-296-0314

More information and Frequently Asked Questions (https://science.nrao.edu/observing/news-release)

Read previous NRAO press releases here (https://public.nrao.edu/news/)

Recent Media Releases

Image Release: Distant Milky Way-like Galaxies Reveal Star Formation History of the Universe (https://public.nrao.edu/news/image-release-first-radio-image-of-distant-milky-way-like-galaxies-reveals-star-formation-history-of-the-universe/)
17 December 2019

Radio Jupiter: Seeing the Giant Planet in a New Light (https://public.nrao.edu/news/radio-

[jupiter-seeing-the-giant-planet-in-a-new-light/)](https://public.nrao.edu/news/jupiter-seeing-the-giant-planet-in-a-new-light/)
13 December 2019

[Antenna Design for the Next Generation Very Large Array](https://public.nrao.edu/news/antenna-design-for-the-next-generation-very-large-array/)
[(https://public.nrao.edu/news/antenna-design-for-the-next-generation-very-large-array/)](https://public.nrao.edu/news/antenna-design-for-the-next-generation-very-large-array/)
12 December 2019

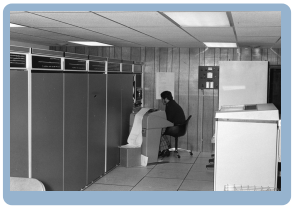
[ALMA Spots Most Distant Dusty Galaxy Hidden in Plain Sight](https://public.nrao.edu/news/alma-spots-most-distant-dusty-galaxy-hidden-in-plain-sight/)
[(https://public.nrao.edu/news/alma-spots-most-distant-dusty-galaxy-hidden-in-plain-sight/)](https://public.nrao.edu/news/alma-spots-most-distant-dusty-galaxy-hidden-in-plain-sight/)
11 December 2019

[IMAGE RELEASE: Giant Magnetic Ropes in a Galaxy's Halo](https://public.nrao.edu/news/giant-magnetic-ropes/)
[(https://public.nrao.edu/news/giant-magnetic-ropes/)](https://public.nrao.edu/news/giant-magnetic-ropes/)
26 November 2019

[A Weakened Black Hole Allows its Galaxy to Awaken](https://public.nrao.edu/news/weakened-black-hole/)
[(https://public.nrao.edu/news/weakened-black-hole/)](https://public.nrao.edu/news/weakened-black-hole/)
18 November 2019

From the Archives

Ellen Bouton



About this month's photo: In December 1974, Very Large Array (VLA) construction was underway at the site: steel erection for the Antenna Assembly Building, spiking and preliminary alignment of track, and transporter weldments on location awaiting assembly. Meanwhile, back in Charlottesville, the VLA computer group was working in rented office space in the Gallery Mall building on Ivy Rd., west of the Edgemont Rd. building, and east of the current Central Development Laboratory building. During December, the major portion of the DEC-1060-E asynchronous computer was delivered there, installed, and made operational. According to the *VLA Monthly Progress Report*, "The software development group's activities have mostly been concerned with learning to use and operate the new system." Is anyone able to identify the computer group member in the photo?

From the Archives is an ongoing series illustrating NRAO and U.S. radio astronomy history via images selected from our collections of individuals' and institutional papers. If readers have images they believe would be of interest to the Archives, please contact [Ellen Bouton (mailto:archivist@nrao.edu)](mailto:archivist@nrao.edu) .

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