

ANASAC report from May F2F meeting in Green Bank, WV

The ANASAC met on May 20, 2015 in Green Bank, WV, for the second time as a standing subcommittee of the NRAO Users Committee. The full one day meeting took place prior to the 2 day UC meeting May 21-22. This report focusses on the ALMA-specific topics covered primarily during the ANASAC day.

Executive Summary

This last year has been a busy one for the ALMA Observatory, and much progress has been realized. Observations with ALMA are in high demand, and the observatory appears to be doing a decent job at correcting some of the issues that had plagued earlier cycles. The ANASAC is cautiously optimistic that issues like increasing observing efficiency and reducing time from observation to PIs receiving data are being resolved. That said, there are a couple of recurring themes which the ANASAC heard in various presentations. The first of these is resources, and it appears in multiple locations -- from the pipeline presentation where the NAASC had an almost factor of two increase in data reduction effort over what had been planned in the ALMA2010 budget, to the archive where lack of resources is slowing development, to the EOC where most of the new capabilities are labelled "high" priority due partly to lack of resources/time available to demonstrate capabilities. On all these fronts, there is movement in the right direction, but the ANASAC worries that without major realistic prioritization any new effort will effectively be, as one august member of our committee suggested, "changing the buttons". The NRAO has always been remarkable in its ability to manage projects with less than optimum resources. The second theme is transparency with the community. The ANASAC would like to impress upon NRAO that this is a crucial component of increasing the ALMA user base. The reasoning behind prioritization for the capabilities for Cycle 4, and the lack of explanation for why some more things couldn't apparently be included, was not apparent. Items like the project tracker and archive usability are key components of ALMA's face to the community, and still have issues. The duplication checking is another example of where increased transparency is necessary, as well as the stale data issue. These are not new issues but they are important ones. We hope to hear progress on these issues at subsequent meetings.

Integration of ANASAC into the UC

Due to the conversion of ALMA into an operating observatory with the commencement of early science, NRAO considered it timely to integrate the ANASAC into the Users Committee. This is the second year in which the ANASAC has been a subcommittee of the NRAO Users Committee. The initial vision was that the ANASAC be composed of the ASAC members, plus a Taiwanese representative, and any "ALMA-interested" members of the UC would be welcome to attend the ANASAC meeting and provide input. The attendance at the ANASAC meeting

revealed that much more integration is needed, as only one non-ANASAC member (the current UC chair) attended the ANASAC day. In the future, NRAO should work to foster increased interest and attendance at the ANASAC from UC members, and the ANASAC and UC chairs should coordinate to encourage UC members to attend all three days of the ANASAC+UC meeting.

We also caution that the view of the “ANASAC as ASAC+Taiwan” is not viable, since it is necessary to ramp up future NA ASAC members so that they understand the history and politics of the project. We strongly recommend that the ANASAC contains members in addition to the ASAC+Taiwan representative. The non-ASAC members are needed so that they can participate in the ALMA discussions and become potential ASAC members in the future.

From previous experience with the ANASAC when it was a standalone committee, the current format (one full day) is a much abridged version. The schedule was packed full of presentations, leaving little room for discussion. The agenda is clearly still in a state of flux, and future presentations will need to evolve to convey the optimal amount of information while retaining schedule flexibility for discussion.

The ANASAC will be changing its makeup over the next year or two as turnover of committee members leads to a decreased total number of members, which would be roughly six in a steady state situation. Historically there have been members who have served multiple terms, which provides a good amount of working memory of issues which have arisen in the recent past. We encourage NRAO to continue this for a small number of members, but be cognizant of also broadening the community invited to become members. We expect the pool of future potential ANASAC members to grow as the pool of North American ALMA users grows.

ANASAC Charge #1

Scientific outcomes and impact from Cycles 0, 1 and 2. Is North America doing well--what are the challenges?

An impressive percentage (81%) of the Cycle 0 projects for North America have resulted in a published refereed paper. This undoubtedly reflects the high quality of ALMA data and the enthusiasm of the community to analyze their results. The publication rates for Cycle 1 and Cycle 2 are predictably lower due to the delays in obtaining the data in those cycles and delivering them to the principal investigators. The results emphasize the high priority that must be given to validate and deliver data quickly to investigators.

The number of publications is growing steadily. However, the number of archival papers is steady in time (slide 17 in A. Wootten’s presentation), where an increasing number of archival publications would be expected as the archive increases in size. The NAASC should monitor the number of archival publications closely, and if growth in the number of publications is not

seen in the near future, it should assess why that is the case (Is the format of the archival data useful? Is the archival interface conducive for archival research?)

ANASAC Charge #2

Assess the status of Cycle 1 & 2 observations and progress made towards Cycle 3. For Cycle 2, are the data meeting user expectations, modulo the best efforts approach to early science? Are the data being released to the PIs in a timely fashion?

Delivered Cycle 1 and Cycle 2 observations have resulted in spectacular images and cutting edge science. The delivery rate has however been very slow (average about 3 months, but some data sets have taken up to 5 months to be delivered following completion of observations), which has resulted in frustration among the PIs. This slow release of data seems to have two causes:

1) data sets required manual processing prior to the deployment of the pipeline, which was not implemented until October of 2014. Even though a majority of data sets can now be calibrated by the pipeline, almost all pipeline-calibrated data sets still require human intervention and the number of expert data analysts/scientists/astronomers at the NAASC is too small to meet this demand, and

2) following calibration the level of imaging work done by the NAASC varies substantially between different people, with some spending a lot of time on producing almost science ready images to PIs.

Going forward, continuing to automate the pipeline, such that it can handle the vast majority of data sets without human intervention, should have the highest priority. We were happy to see a plan to address some of the most common issues that require human intervention during pipeline calibration, and look forward to hearing an update on this at the next telecon. We also recommend that there are more standardized recommendations put in place for image delivery to PIs so both PIs and NAASC staff know what is expected. Delivering science-ready images to PIs is a commendable long-term goal, but with the current backlog our recommendation is to only deliver verification images for the rest of Cycle 1/2.

A second concern is the delivery of stale data to PIs, i.e. of data sets that cannot be completed within a reasonable time frame to due to configuration schedules etc. Delivering the few data sets that are affected by this should happen on the shortest possible timescale. In the future, with configurations scheduled, datasets should be able to be identified as “stale” quickly, and the partial data should be given to PIs. This same concern (PIs being able to evaluate data prior to completion of all scheduling blocks in an observation unit set) is also applicable once large programs are underway, as this allows for a check on optimizing the initial observing strategy.

ANASAC Charge #3

The third Call for ALMA Development Studies/NA is under way. Please comment on the process, which was lengthened this cycle and accompanied by specific suggestions ('ALMA2030') developed by ASAC.

The ANASAC listened with interest to the presentation summarizing the current status of ALMA development by regional project scientist A. Wootten. The ANASAC is very encouraged by the prompt adoption of the ALMA2030 document by NRAO to guide its development process in the recent call for studies. We hope this increases the unified impetus of development across the different regions. It is important that both NRAO and the NA representatives to the ALMA Board remain consistent in this approach, as well as continuously encouraging the other regions to pursue it.

NA has put forward its 2015 call for development studies. We thank A. Wootten for providing the ANASAC with the current pool of referees, and hope that the response to his request for additional names was adequate. We recommend to include among the referees not only experts in hardware and software but also astronomy experts, who will bring the science user perspective into the process. We believe that the clear time separation between “studies” and “projects” calls (brought about this time by programmatic considerations) benefit the process.

We reiterate the importance of having open communication between NRAO and the ANASAC with respect to the selection of studies and projects, as regional choices need to be defended at the ASAC and JAO Development Steering Committee levels. The ANASAC also reiterates the importance of widely advertising these proposal opportunities beyond the NRAO newsletter to reach to the wider community.

Regarding execution of the Development Projects, the ANASAC recommends that NRAO work closely with PIs of approved projects to ensure smooth integration with ALMA where appropriate. This will encourage new and innovative proposals for enhanced ALMA capabilities. This is less an issue for post-observation analysis software or algorithms, but is essential for system software or hardware upgrades, where acquiring test and commissioning time can be difficult. As more projects are approved and move towards the deployment phase, it will be important for NRAO to facilitate the process of making sure new ALMA capabilities can be utilized. Unnecessary delay in access to new capabilities may dissuade ALMA-NA expert technical groups from committing to ALMA Development work.

ANASAC Standing Charge #1

To assist ASAC in presenting a North American view with respect to ASAC

With the evolution of the ANASAC into a sub-committee of the User’s Committee, the internal organization of the ANASAC has changed somewhat. Currently there is a North American ASAC vice-chair, as well as an ANASAC chair. The committee decided that these should be two different people so as not to overburden the ANASAC chair when the ASAC vice-chair assumes the ASAC chairship.

ANASAC Standing Charge #2

To lead community outreach through leadership of workshops. -- Plans for next [NAASC](#)-sponsored workshop -- Plans for community workshops, tutorials, etc...

The ANASAC did not explicitly discuss the next NAASC-sponsored workshop at the face to face meeting (but should begin discussing appropriate topics). However, there was discussion about community outreach and workshops. The NRAO Community Days which occurred prior to the ALMA cycle 3 deadline did a good job of exposing more astronomers to mm/submm astronomy with ALMA. The NAASC has been very pro-active in this respect over the last several years and this work is paying good dividends in stimulating interest in proposing for ALMA observations. The ANASAC commends the NAASC for heeding the call for additional student training, and inserting an interferometry summer school adjacent to the single dish summer school happening this summer in Green Bank.

M. Lacy's talk on archives mentioned allowing the NAASC cluster to be used by astronomers outside the NAASC for computing, analogous to what is done in Socorro for JVLA datasets. The ANASAC applauds this and recommends that multiple means are used to communicate this broadly to the community: via NRAO e-News, as well as targeted notices to current and future ALMA observers. The ANASAC would like to hear at the next face-to-face meeting about how this resource is being used by the community.

ANASAC Standing Charge #3

To provide a mechanism for widening ALMA's base within the community and feedback to the [NAASC](#) on community perception of ALMA.

We heard from A. Wootten that PIs proposing for ALMA come from a broad swath of the astronomy community, not just the radio-millimeter-submillimeter (RMS) segments, and it is reassuring that ALMA is attracting interest from the wider astronomical community. The RMS crowd does appear to have a slight advantage in being successful PIs. We encourage the training and preparation to widen the user base, and would like to hear the Cycle 3 proposal selection statistics in this respect. Self-identifications as to previous experience might be useful in this regard; we understand that some ALMA partners are uncomfortable with this approach, but believe that this is the best avenue to track how well the observatory is capturing new interest in the community. Science outreach is also key in making sure that the entire community feels that they can make use of this facility.

The user surveys are an excellent mechanism for identifying topics of deep concern to ALMA proposers. Although previous surveys have indicated the users are generally satisfied with helpdesk and scheduling block generation, there is a worrisome negative trend in the former category (helpdesk) over the first 3 cycles, and we hope that the results of the survey which was underway at the time of the face-to-face meeting shows some improvement in user satisfaction.

ANASAC Standing Charge #4

Evaluation of Proposal Process: Cycle 3

The May face to face meeting occurred less than a month after the deadline for Cycle 3 proposal submissions, and a user survey is underway to assess opinions. We congratulate the NAASC and the Observatory for a record number of proposal submissions, at 1582 unique proposals. The positive trend of increasing numbers of proposal submissions from Cycle 1 to 3 show that there is high interest and demand for ALMA observations. Going forward with this assumption of increasing numbers of proposals, the ANASAC argues that a balance between increasing the level of triage and increasing the number of proposal assessors should be struck.

The ANASAC was heartened that recent operations results showing projections for Cycle 3 indicate a high likelihood of success in carrying out approved observations, but remembers the recent saga regarding optimistic projections for observatory efficiency and completion fractions for Cycles 1 and 2 which changed dramatically due to unforeseen weather and other sources of downtime. The recent history of average number of antennas available shows that the numbers needed for Cycle 3 are achievable, as is the recently demonstrated observing efficiency. The ANASAC would like to hear about further efforts to maintain and increase the observing efficiency at levels that imply a high completion fraction for Cycle 3 and onward.

ALMA Construction

The ANASAC congratulates NRAO on the pending official closeout of ALMA construction on June 30, 2015. The completion of antenna pads and site power infrastructure over the past year was a key accomplishment that enabled the successful long baseline campaign.

Two warranty items will remain after construction closeout. The first of these, quality control issues with the 4 Front End Handling Vehicles, should be resolved fairly easily. The second item is the temperature-dependent astigmatism of the Vertex antennas. It is not clear just how serious this problem is - the ANASAC has never been presented, for example, with a table of typical Band 9 aperture efficiencies for the 3 antenna types. However, a plan has now been approved to outfit two of the Vertex antennas with a network of thermistors and to monitor their surfaces with astrophotography over a range of environmental conditions. This investigation should be complete by the end of 2015, and corrective action is expected to be finished by the end of 2016. The ANASAC would like to hear updates on this effort at subsequent telecons/meetings.

ANASAC members in attendance:

Alberto Bolatto
John Carpenter
Shep Doleman
Shih-Ping Lei
Dan Marrone
Karin Oberg
Rachel Osten (attended remotely)

Dick Plambeck
Douglas Scott