



ALMA BOARD

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Subject: Board's Response to the ASAC

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ALMA Board Response to the ASAC: November 2021

The ALMA Board continues to deeply appreciate the ASAC's contributions toward maintaining the scientific vigour of ALMA, especially considering the challenging conditions of the past 20 months. The Board warmly received the latest Report from ASAC prior to our November 2021 meeting. The ASAC Chair, K. Kohno, summarized the Report first to the Board's Science Committee and then again later that week to the entire Board during the Ordinary Session of the Board meeting. After Kohno's first presentation, the Science Committee prepared a preliminary response which the Chair of the Science Committee presented to the Board immediately after Kohno's second presentation. In this document, we elaborate on our response to the ASAC.

Permanent Charge #1

The ASAC continues to emphasize the importance of understanding the sources of uncertainty in calibration in order for the Observatory to be able to make informed judgements on the feasibility of, and resources needed for, desirable improvements.

The ASAC received an excellent presentation by R. Kneissl (JAO) on the ongoing efforts at ALMA to improve flux calibration at their October 2021 meeting. Indeed, flux calibration depends on many factors and even small improvements in these could add up to significantly better flux calibration later on. The ASAC suggests reasonable approaches to continue ALMA's in-house flux calibration improvement efforts in its report. The Board is confident that the JAO is presently assigning the appropriate level of resources to flux calibration improvements amid competing demands. Given the importance of this topic, we recommend the ASAC be regularly briefed, e.g., once every two years, on the status of the JAO's flux calibration efforts.

The ASAC emphasizes the importance of making sure that the community is well aware of the new capabilities being offered in a given Cycle, e.g., via advertisement and science verification data releases. The ASAC also agrees with the plan for ObsMode 2021/22.

The Board agrees that the low demand for newer observing capabilities, and the low success rate of those proposals that did request them, in recent Cycles is worrisome given the resources invested to make them available. The JAO should consider emphasizing press releases about these new capabilities, so prospective PIs can more easily learn of their availability. Similarly, the ARCs can centrally highlight the scientific potential of ALMA's newest capabilities during their various community interactions prior to proposal deadlines.

Permanent Charge #2

The ASAC encourages the prioritization of efforts in resolving the renormalization issues and making appropriate communications to potential observers.

The Board concurs that the renormalization issue is an important issue and also welcomes future updates on the efforts being undertaken to resolve it. Likewise, the issue should continue to be communicated to ALMA users as appropriate. As of November 2021, however, the ISOpt has posted two news items on the renormalization issue and there are two articles presently about it in the ALMA Helpdesk's knowledgebase resource. Furthermore, the issue has been described in the ESO electronic newsletter and the EU ALMA newsletter, and the NA and EA ARCs contacted their respective communities in a similar fashion.

ASAC is concerned by the fact that no Band 10 projects and a minority of Band 9 projects queued for Cycle 7 were observed. They encourage the observatory to investigate the causes of this low completion rate and adjust priorities to improve it.

The Science Committee received a presentation from DSO Head E. Humphreys with an analysis of the issues facing the completion of Band 9 and 10 projects with the ALMA 12-m Array, prior to the November 2021 Board meeting. This summary demonstrated that the causes behind the low completion rates were related to i) little excellent weather in configurations where Bands 9 and 10 projects were executable during Cycle 7, and ii) an abundance of higher-ranked projects at lower frequencies that also needed excellent weather, e.g., at the top end of Band 7, in the queue. Whether the queue should be modified to prioritize Band 9 or 10 projects over higher ranked lower-frequency proposals requires careful planning, since it may otherwise result in higher ranked B7 science not being done, and the required tools for this modification do not yet exist. The Board strongly encourages the development of a predictive tool to determine the likely completion of projects given weather trends, elevation requirements, etc., as the Cycle proceeds, and to take this into account when prioritizing projects during excellent weather. Such an approach would enable a responsible prioritization of Band 9 and 10 projects, and hopefully better exploit Band 9 and 10 capabilities for transformative science.

ASAC is curious to know if Supplemental Calls are needed given the large workload they impart on the JAO staff. If insufficient numbers of ACA + TP projects are not being accepted during regular calls, the ASAC would like to know the reason. Is there a bias against ACA-only proposals during regular calls?

Prompted by this inquiry, Observatory Scientist J. Carpenter provided important information regarding Supplemental Calls to the Board Science Committee. To summarize, the ACA + TP queues have become underpopulated throughout the course of recent Cycles, and the Supplemental Calls do provide sufficient numbers of scientifically well-motivated projects for those Arrays to keep observing continuously. A concern is that PIs may have simply become used to waiting for the Supplemental Call to devote their energies to ACA + TP projects. Indeed, the numbers of stand-alone ACA projects proposed during the main calls appear to have steadily dropped by 10% total since Cycle 6. That said, the demand for 7-m Array time during the Cycle 8 main call was much higher than for Cycle 7, i.e., 14,800 hr vs. 8,900 hr, respectively. The JAO has recommended that they consider future Supplemental Calls on an as-needed basis (as early as for Cycle 9) that are targeted only toward particularly thin ranges in RA, something that can be predicted well during the first half of a Cycle. This approach would both keep the queues filled

and also reduce the workload on the JAO. In addition, the community would no longer expect an open Supplemental Call to submit their ACA + TP proposals. The Board endorses this approach, and recommends the ASAC be periodically briefed on the need for Supplemental Calls in future meetings.

Permanent Charge #3

The charge related to assessment of ALMA's science outcomes via statistics, etc. is only considered during spring ASAC meetings. Nevertheless, the Board would still like to know if additional data are needed to address specific questions, understanding that providing further information will require significant time investments by JAO staff.

Permanent Charge #4

The ASAC recommends that JAO explore ways to increase the quality of the comments that DPR reviewers provide to proposers, including the possibility of creating a structured format similar to the one used in panel consensus reports. Also, the ASAC recommends the JAO explore ways to improve the effectiveness of Stage 2 in DPR, including the possibility that reviewers can react to comments written by others both positively and negatively.

The Board commends the JAO for successfully executing the Cycle 8 proposal review process despite the significant changes from previous Cycles such as the implementation of distributed peer review (DPR), virtual meetings, dual-anonymous reviews, etc. The Board agrees that DPR reviewers should be given better guidance to provide helpful comments, though the issue of unhelpful comments did not appear to be widespread during the Cycle 8 process. A structured format for comments, or even an increased minimum number of characters in comments, are good suggestions. Indeed, the JAO itself appears to be preparing to implement such tweaks for Cycle 9. Regarding Stage 2 of DPR, the Board is also surprised at the low uptake of reconsiderations of scores and comments at that stage, with only ~15% of these being changed and only modestly at that. The ASAC suggests allowing DPR reviewers to comment anonymously on other reviews during Stage 2, in case a misapprehension is spotted. The Board agrees that it is reasonable for the JAO to explore this possibility, including whether the Reviewer Tool can be easily modifiable to allow it.

The ASAC supports the JAO initiatives to minimize conflicts of interest for reviews of Large Program proposals so they receive a broad review from a representative scientific panel. Further, the ASAC recommends the JAO consider what is the right balance between LP and smaller programs.

The JAO has proposed changes to the panel review process to improve the evaluation of Large Program (LP) proposals, including a slight relaxation of conflict-of-interest guidelines and having ~60 external and independent reviewers look at two LP proposals each to provide extra informed

input. Following the recent increase in hours requested by the community, the JAO should continue to monitor the demand between LPs and small programs and make appropriate recommendations about how they should be balanced. Relatedly, the JAO has suggested increasing the threshold for panel review from 25 hours to 50 hours, so basically only LP proposals will be considered by panel review for Cycle 9. This move will significantly reduce the burden on panel reviewers further. The Board endorses these initiatives.

The ASAC recommends that JAO investigate inter-regional differences in proposal scores in more details, examining different hypotheses.

The Board appreciates the work the JAO has invested in tracking these differences and are pleased that new rules such as dual-anonymous review have minimized other biases in the past, e.g., by gender or seniority. The lower rankings for proposals from the EA and CL partners relative to those of the NA and EU partners, however, remains a persistent concern. The Board agrees that the JAO and ARCs should continue to investigate the source of this remaining difference. If inexperience with English is the culprit, the ARCs should explore whether providing guidance on language as part of pre-deadline Helpdesk activities would be too burdensome for available staff.

Permanent Charge #5

As stated in the ASAC Report, no issues regarding operational or scientific issues raised by the wider communities warrant special attention in response to this Charge, as these issues are addressed elsewhere in their report.

Permanent Charge #6

The ASAC strongly endorses the proposal for the Band6v2 receiver suite as part of ALMA2030 improvements to observatory capabilities.

The Board considered the Band6v2 proposal during its November 2021 meeting and voted unanimously to accept it without modification. The Board thanks the ASAC for its endorsement of the proposal. The Board is also pleased with the progress of developments related to the ALMA2030 initiative, and urges all regions to continue to work harmoniously to realize this vision.

Ad Hoc Charge #1

The Board notes that the recent delivery rate of data from Large Project teams to ALMA has been low, with only two of twelve LP teams from the past three Cycles delivering data so far. Hence, the ASAC is charged to identify for the April 2022 meeting what level of observatory and ARC support is needed to ensure the success of Large Programs, including timely delivery of higher-

level data products to the ALMA community. Polling the PIs of more recent LPs is recommended to determine what roadblocks they have faced in completing their projects.

Specific Actions to the ALMA Director

1. The ALMA Director will apprise the ASAC on recent progress on flux calibration and the need for Supplemental Calls on a reasonably regular basis, e.g., every two years.
2. The ALMA Director will highlight the availability of new capabilities via press releases or news items based on science verification data.
3. The ALMA Director will update the Board on progress with the renormalization issue and how it is being communicated to ALMA users for the April 2022 meeting.
4. The ALMA Director should continue to investigate the production of a predictive model that will aid in the completion of high-frequency ALMA projects.
5. The ALMA Director will continue to monitor the relative demand for small and Large Projects to help gauge what the appropriate balance between these activities should be.
6. The ALMA Director will explore the implementation of anonymous comments by other reviewers during DPR within the Reviewer Tool, to encourage greater consideration of changes to scores or comments at the Stage 2 step.
7. The ALMA Director will continue to explore the reasons behind the lower ranks received by proposals from EA and CL relative to those from NA and EU. Relatedly, the ALMA Director will explore with the ARCs the feasibility of providing English language assistance upon request as part of pre-deadline Helpdesk activities.
8. The ALMA Director will assist ASAC in their Ad hoc Charge to consider what appropriate levels of ARC or JAO support are needed for the success of the Large Programs, or at minimum the timely delivery of data products to ALMA.