Transcriptions of Q&A sessions captured during the June 11th NRAO Webinar

ALMA proposal questions:
Q: How reliable are the TPA (total power array) measurements? Does atmospheric absorption affect those measurements?
A: Well, atmospheric absorption affects any observation. All the antennas have on them a WVR (Water Vapor Radiometer) and a hot and cold load to try and gage an atmospheric model the moment your observations take place. We do actually go through generating an atmospheric model and calculating what that is for the particular conditions during your observation. We even go so far, we don't right now, but we should soon have a probe which works in the edge of the oxygen line to get the thermal profile of the atmosphere, so the atmospheric model that we use is actually quite accurate.

Q: There are limits on the number of sources pointing etc., per science goal, but is there a limit on how similar each science goal can be?
A: I don't know how you would define similarities of a science goal, but there are 5 science goals.

Q: Can you reiterate how the ACA (ALMA Compact Array) usage influences time requests?
A: The ACA is a small antenna; a small set of antennas and so it requires more observing time for any of its calibration, and to make a good image of the sky because it does not have as many antennas. So to make a good image that includes the ACA and the 12m array one has to observe moderately longer with the ACA. And so we have an estimate that you'll have to observe three times as long if you include the ACA and the Total Power Array in your time request. That's as far as I can go with an answer right now. We don't have detailed constructions. If you go to the science verification, you'll not yet find a 12m array plus ACA total power data set there. We do have some data sets of the 12m array and the ACA and some of the total power ACA but we don't have one incorporating all three yet, so it's a little difficult to come up with a perfect prescription for that. So basically, if you have a time estimate for the 12m array, that's going to get multiplied by a factor of 3. That's all there is to it to estimate what you need for the 12m array plus the ACA and total power array.

Q: Will any of the dishes from Cycle 1 be used for educational purposes, where you could basically log in remotely and make use of a dish--essentially for radio technique courses?
A: Not now. We will have EPO (Education and Public Outreach) availability of ALMA in the future sometime, but you have to remember we're building this thing now. It's difficult to allocate time to the three different arrays we're trying to observe with at the same time as we're trying to commission new antennas. I said there are 61 on the site that are getting built; all those have to be commissioned and brought into

testing. We can't do any use of the antenna remotely now. There used to be a Japanese site that would allow you to. You can look at the array online if you go to the portal, I think you can find a link which will allow you to see what the array is doing now. You can use the science verification data if you wish to use the data in a classroom context. There is a visitor's gallery at the site. Right now no visitors are allowed at the site because it's a very dangerous place with the construction going on, but eventually you will be able to come up to the visitor's gallery to watch the antennas move around and have a more personal experience with ALMA. But, even the observers don't go to ALMA.

Q: Angular resolution question: If one is not sure what one will find can one go to a lower resolution for observation and mention that they'll submit a higher resolution proposal once it's clearer what's out there?
A: Sure, you can submit a new ALMA proposal at any observing deadline. We expect to have even more capabilities available in cycle 2 although those are not defined at this time. So you'll have more antennas in cycle 2, that much I can promise you, and so instead of 32 antennas you'll have more collecting area, you'll have more baselines, you'll get a more spectacular image.

Q: What are the major changes in the mosaicking capabilities for cycles 0 to 1?
A: Just more pointing. I can't think of much else we changed. The OT (Observation Tool) for cycle 0 did not really calculate the sensitivity of a mosaic correctly. We have corrected that, so that should be correct in cycle 1. We do a proper nyquist sampling and there is a slightly different pattern (in the OT). You should be able to see that in your source view window.

Q: What is the state of polarization capabilities in cycle 1?
A: We have not yet commissioned polarization. We had entertained the thought of perhaps allowing more site polarization observations that we could try to achieve 1% but given the pressure of trying to commission all the other capabilities, constructing the array, and the need to get polarization experts in Chile, and the need to get polarization capabilities in CASA, we aren't there yet. It's not going to be offered in cycle 1 in the sense of you'll not be able to use XY and YX correlations.

Q: Is there a suggested and maximum number of hours one can propose for or should propose for?
A: Not over 100 hours. Remember we have 800 hours in the array. That's how the time is allocated.
Q2: In terms of suggested?
A: What was the average in cycle 0? 4 hours? If it's 4 hours, that's more favorably considered. What actually happens is your observation gets broken down into what we call scheduled blocks. We take a hour or so to observe and so the more time you request, the more scheduled blocks there are, the more difficult it is to reduce the data, and the more your data may get scattered over several different days of the week. It's really better to try to keep it to a single 4 hour, or so, block if you can.

Q: Does sideband confusion need to be considered during observational setup?
A: The sidebands are separated by LO (Local Oscillator) offsetting in the current instantiation of ALMA. If you need to do total power in band 9, the sidebands are not separated; it's a double sideband receiver. For interferometry they are separated. The receivers themselves have about a 10db separation of the two sidebands and through the use of LO offsetting it can get another 10dbs or so, it depends on which receiver of separation, you should be able to completely suppress the other sideband in interferometry. Single dish observations in band 9 is another problem. We hope to have a system of LO offsetting available (we are promising this in cycle 1) which you can use to separate you sidebands much the way Herschel does that with its double sideband receivers in space.

Q: Question about band 9: The best weather occurs at the end of summer so presumably band 9 observations will be prioritized then, will this negatively effect the chances of proposals for bands 3, 6, and 7 that target sources that are only available in those months?
A: Well not really. If you read the various things that you'll find in the science portal, you'll see that band 9 is really hard. 20% of the time, based on our observations with tipping meters, we think that the weather has precipitable water vapor at .7 or so, which is roughly an optical depth of 1 at that frequency. We can observe at that frequency whenever that occurs, and that's roughly 20% of the time. In practice what we find is that's much harder to achieve and in cycle 0 we have only completed a few data sets, in the sense of observed them (they are not reduced yet), in band 9 because of the difficulty in getting the weather. What I showed you was the average. Last summer, last July, was terrible. We had ice storm after ice storm and very little got done at the array. We weren't doing scientific observations then, but nonetheless, the weather wasn't good. The two July's previous to that, 25% of the time the precipitable water vapor was .3mm, excellent. Who can say what this July is? Usually la Nina is a bad thing for ALMA. We're going out of la Nina now, which gave us terrible weather during the beginning of cycle 0, and into an el Nino pattern. Hopefully that will mean better weather this July but it's awfully hard to bank on that. We say in one of the guides that 10% of the time may be available for band 9 and that's what it is. Even in the good weather months it's not very much of the time. So, it's very difficult to get a band 9 observation through on the array at any site in the world, and ALMA is the best of those sites. But please please put your band 9 proposals in.

Q: Is there a configuration schedule and how will that be determined?
A: No, don't think about configurations. You need to think about the resolution you need and the maximum angular size that you need in your observations.
A2: It hasn't been decided yet when we'll have the longest baselines available, so the thought is that we'll have antennas now in compact pads and we'll add antennas to longer and longer pads as the year goes by. But, as you know from cycle 0, this is very dependent on how things roll out. We've got to finish the array; that's a priority so we can't tell you the configuration schedule on when those long baselines will be available.

A3: I can tell you that we have one antenna now on a 2km baseline that's larger than the longest baselines we'll have in cycle 1 to test the phase correction capabilities of the water vapor radiometry system and some of the early data I've seen suggests that's working pretty well. But, that's going to be challenging. We'll get you the data, we go through, we reduce it, we make sure it meets your science goals before we deliver it to you.

Q: If I want to observe two different bands and require a mosaic in both am I correct in assuming that two mosaics will be defined differently?
A: Yes, and they'll be different science goals.

Q: Can we do a CASA simulation for the combination of the main array ACA and the total power data?
A: I believe so. Yes. If you look at the ALMA memos online, not using CASA but using GILDAS, we went through a number of simulations back in the early 2000's. There are memos by Guilloteau, Pety (memo ~386-387)—that will show you simulations of various objects using the ACA total power or the main array. We don't have any illustrations in the primer of that in the moment just because of the lead time on the needs for the sort of thing. GILDAS still has this capability or you can use CASA if you want. That's why we have the capability in there. There's also a web based (OST) Observing Simulation Tool that has a link in the science portal which you can use to do an online simulation if you feel reluctant to try to go through the inputs to CASA.

Q: A follow up to the configuration schedule, the question is: If you have a source that requires a particular resolution at a particular time, what do you do in terms of that?
A: Propose for it and we will observe it when it's time. You may recall with cycle 0 early on we thought we would start with the longest configurations, the longest baselines because of the weather was actually quite good then. But in fact the construction progress got in our way and we had to start with the more compact array. And so what we are doing--with cycle 0 as a way of example--is we observed those sources which we could observe early on in the season with the compact array. We're now observing with the main array and at the conclusion of the season we want to have enough antennas--of course we're using 16 for cycle 0 and we'll have 32 for cycle 1—then we'll be able to have the compact and the extended array simultaneously so those objects which could not have been observed in one configuration or the other at the beginning of the year will be observed later in the year at the appropriate LST range.

Q: A question about the number of sources: Can you have more than 15 sources with the exact same setup by putting them in different science goals in the OT?
A: Yes, you can have 5 science goals; 15 sources per science goal, total of 75.

GBT Proposal (Dave)
Q: For remote reduction of data: Can observers log in remotely to reduce their data?
A: Yes. That's a fair question: Our spectral line data reduction package is GBT IDL, not everybody has IDL licenses, so yes, we have computers available, so when you come to observe, or observe remotely they need to have a GB account, and with that same account they can log onto our computers to do data reduction. I encourage them not to use the same machine as used to carry out their observations (which causes problems with the current observer), we have specialized computers for data processing that users can log in and reduce their data.

VLA & VLBA Times (Lorant)
Q: Question about the proposal tool: The tool sometimes warns me about confusion limit, what is this exactly?
A: The confusion limit is if you are so sensitive that you'll pick up background sources. That means that you might get sources in the background—they you do not reach the sensitivity that you require because of sources in the background that we don't know about. It just blends together into noise.

Q: I'm interested in proposing for a single galaxy in H1, do I need to use the total bandwidth of say 4MHz of the channel width for the RMS estimation of the proposal?
A: What you need to do is if you have the spectral resolution that you require, for your line, that's what you need to put in your exposure calculator to get enough signal to noise for that bandwidth. So, 4MHz is probably a few hundred km per second that will not capture the whole galaxy in one channel so you probably want a few KHz bandwidth for your spectral line.

End of Webinar Questions and Answers
Q: In the proposal submission tool, it asks if you need staff Support, what does this mean?
A: It means that if you are a beginner, sometimes it would be helpful to have someone guide you through the, for example the observation preparation stage or maybe the proposal stage even or the data reduction stage. If you need help for the proposal we would like you to contact a staff member before you submit a proposal. Otherwise if you click this particular item that helps us, telling us that if you are coming to Socorro or any other place for your data reduction that we can plan some staff members to help you.
A2: Can I add something to that? That's very early in the process. If you didn't check that box, and much later on you do need that help, feel free to ask us for help. We rarely look at that box that early stage in the proposal. It is helpful a little bit in planning, but if you don't request help at that stage but need it afterwards we are still pleased to help you.

General Questions for any of the talks:
Q: There is a question about the details for the TAC (Time Allocation Committee) for ALMA proposals?
A: It's a single international review panel. There are 9 panels in total, some topic areas have 2-3 panels, other ones--everyone has at least 2. They produce a science ranked list of projects based on scores. There's first a remote ranking process that happens before face-to-face meetings. Scores go in and the top 70% of the projects according to the scores from four assessors, which is 2/3 of the panel members, will advance to be discussed at the face-to-face meeting. Also, projects that had a wide dispersion of the scores will also be included in that list. Then the comments are entered by the assessors—there is a primary and a couple of secondary assessors for each proposal and they enter comments before the meeting. There's a face-to-face meeting that will take place in October where all the proposals, the 70% of proposals that proceeded to that state…actually, the number will depend on how many proposals we received. The panels, the goal is that the panels will discuss less than 100 the goal is about 80 projects for each panel to discuss during the face-to-face meeting. And they will make a science ranked list that is then presented to a super TAC, which then gives a final science ranking; that list of the top ranked projects will then be technically evaluated. The review panels will disperse and their job is done. There will be a technical assessment and then a scheduling committee. The scheduling committee will take into consideration the distribution of required resolutions as a function of LST of the bands. The request for each band is a function of LST and resolution. At this point, it's November of this year then the schedule should actually be much better known, the configuration schedule, we hope would be understood at that time. And the result of that will be to get priorities to all the projects. So all the projects then will have a priority based on the over-subscription as a function of LST and requested weather and that will go back for comments, I believe it will be fed back to the APRC, and then final approval by the director's counsel, which is a group of the directors of each of the 3 member observatories, ESO, NAOJ, and NRAO. So I'm not sure what part of that you wanted more details, that's kind of a general overview.

Q: Follow up question: So the top 70% of proposals would be reviewed by international TAC of 3-4 members?
A: No. They will be reviewed before the face-to-face by at least 4 members. The panels should have a least 7 members in each one of them and that's a face-to-face meeting. And if there are 1500 proposals, I believe, 70% is the amount that advances, if my memory serves me correctly. Each will be discussed face-to-face.
A2: Al brings up the point that at the face-to-face meeting any panel member can request one of those…If a proposal did not appear in the top 70% list, they can ask to resurrect it to discuss it.

Q: Will ALMA support director's discretionary time requests for targets of opportunity in cycle 1? What are the time scales?

A: Yes, ALMA will have…Yes and no. You can have director's discretionary time although it should not include target of opportunity. Target of opportunity should be submitted as part of the regular proposal, the deadline on July 12. There is a target of opportunity class. Target of opportunity are those astrophysical phenomena that can be reasonably anticipated. Starting with cycle 1 we will do director's discretionary time, and that's the first opportunity to submit something would be after the start of cycle 1 observing. So you don't do it during the proposal review process, you do it after the observing has started. I don't know what the parameters of targets will be there, but it should be something that can't wait until the next proposal cycle.

Q: Question for Lorant out at Socorro. Elaborate on what is meant by a consultation and friends option for the JVLA.
A: Again, during the proposal, we really only use that for our long term planning. It's not binding at all. What we really mean is when you visit here for an instance, then we would like to have more detailed information about the kind of support we provide and we do that—you specify that when you arrange a visit here. So much later, long after you write a proposal, when you have your data and want to visit here, then we have a much better idea and want to know more or less when you visit what we can expect, what kind of resources we have to spend in supporting you. Again, during the proposal time that's very...it's not binding at all. If you're a novice, put down "extensive support". If you are reasonably experience but not much, put down "friend." If you think you are an expert just leave it blank. Whatever you put there, if you change your mind later, you can do so.