

**Preparing the North American Community for ALMA Early Science  
Kartik Sheth (a rough draft to collect my thoughts about Tutorials /  
Community Outreach)  
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Unlike Europe with its ARC and ARC-nodes, the NAASC has a different set of challenges in preparing the NA community for Early Science. In Europe, the ARC-nodes decide how they would best like to prepare their regional community for ES and organize schools, tutorials and workshops in the local area. These are open to the entire EU community but are primarily put together by the ARC-node. They, in turn, ask the ARC for help with supporting ALMA-related talks on status, tools and software. As a result, they have organized a series of workshops over the last few years that span a range from a single day to several days in length. John Hibbard has compiled a list of these "Training Activities" for all the ARCs here:  
<http://wikis.alma.cl/bin/view/DSO/ListTrainingActivities>

### **The NA Community**

Broadly speaking we can divide the NA community into three groups: experts, intermediates and novices.

Experts are those who have used / are using mm/submm facilities such as CARMA, SMA, LMT, JCMT and IRAM. It is important to note, however, that not every person at a CARMA or SMA institution will be in this expert group. The UROs fall into this category. Roughly speaking there are ~50-100 expert users in the US.

Intermediates are those who use / have used the mm/submm interferometers intermittently and have experience with cm/meter data with facilities like the GBT/VLA/WSRT/GMRT etc. In this category are people who understand basics of interferometry but may not appreciate the mm/submm opportunities and challenges. Roughly speaking there are ~500-1000 such users.

Novices are those who have either the very basic information from their graduate classes on radio astronomy or have no knowledge of radio astronomy. They likely have no knowledge of radio interferometry techniques. Roughly speaking there are ~2000-3000 such users.

### **ALMA at ES**

At ALMA Early Science, expert and intermediate astronomers will likely use ALMA. As discoveries are made and the exceptional capabilities of ALMA become known, the entire NA users community will be interested in using the facility. Thus in the first year of ALMA ES (2010), the NAASC should target its efforts at the expert and intermediate users as recommended by both the NSF Review Panel and the ANASAC. We should use the natural amplifiers of the expert communities in the US which are located at NRAO and at the URO-centers (Caltech, UC-Berkeley, U.

Maryland, U, Hawaii, Harvard-Smithsonian Center for Astrophysics, University of Chicago, and University of Massachusetts). Even as we utilize this natural synergy we want to ensure that we are not partial to these institutions and are keeping all opportunities open to the entire NA community.

### **Strategies for reaching the Expert & Intermediate Users**

Since people receive information in multiple ways, multiple techniques are ideal. In other words, small workshops, large meetings, special sessions at other astronomy conferences, classroom tutorial lesson plans, webinars, web pages and documentation are all possible examples. We have already done a number of community-outreach activities:

- ALMA Science web page is the one-stop portal for the NA community
- ALMA Primer is a starting point for experts and novices
- CASAguides – web based tutorials for using CASA and SIMDATA
- Special sessions at the large astronomical meetings (AAS, SPIE, etc)
- A series of ALMA science conferences and workshops
- Other hands-on tutorials CASA, SIMDATA and ALMA tools
- Web-based helpdesk for NA community questions

The following are possible suggestions for the upcoming year – I discuss each of these below:

- Regional Community-led ALMA science days
- Small local workshops in house
- Large 2—3 day local workshop(s)
- Web Demos / Webinars
- Community bridges between the NAASC and the larger NA community

### **Regional Community-led ALMA science days**

The basic idea here is to get the NA community itself engaged and involved in preparing for ALMA ES with our help. For instance, someone interested in ALMA at Ohio State would be encouraged by us to plan a one- or two-day regional workshop on preparing for ALMA Early Science. She would contact a few local people, who are intermediate or expert users who may be agreeable to give broad science talks on how they plan to use ALMA in Early Science. We would support this “community day” by providing an overview of the NAASC and its services, and specific support on user tools with hands-on or lecture style tutorials.

An announcement of these community days should be placed on the NRAO website and advertised as an opportunity for the NA community at the AAS and via AAS newsletters and NRAO email.

Pros: Community driven, promotes local expertise, logistics planning deferred to local organizers

Cons: Requires flexibility on our part to be able to address multitude of user needs, travel / away from home

We will, of course, let the entire community propose for these “community” days so that we are not seen as favoring any particular area or institution. But in my ideal world, I envision reaching the major astronomical regions in the US. For instance, I think we could reasonably do a total of five of these in December and January (assuming the Call for Proposals will be in December in these astronomy hub areas: DC area, Northern and Southern California, Boston area, Hawaii, Chicago and perhaps Arizona and Wisconsin / Ohio.

These community days are likely to be most popular before proposal deadlines. After that there will be a lull in these until the results of the TAC come out.

In my ideal world I would love to see the workshops as follows:

(Shift Dec dates up by a week if we also plan a large workshop – see below):

Dec 7 or 14: Southern California – Pasadena, LA or Irvine ( would contact: Carpenter\*, Turner, Mulchaey, Barth as possible people to organize such a workshop)

Dec 9 or 16: Ifa, Oahu (Contact Williams\* or Kewley)

Jan 05: Ohio State (I am already giving a colloq there on the 6<sup>th</sup>, Contact: Martini)

Jan 18: DC area (Contact Bolatto\*, Vogel, Lazio, Marvel)

Jan 20: Boston area (Contact: Wilner\*, Yun, Pope)

\* indicates ANASAC members

It is a bit worrisome that the Jan workshops on the east coast would be late into the CfP but with the AAS and Victoria meetings it seems impossible to schedule them at any other time unless we did them at the same time as the West Coast tutorials in Dec. This will depend on our staffing.

### **Small local workshops in-house**

One-day workshops can be hosted in the NRAO auditorium for 20-30 people. We could have one every other week through the Call for Proposals and whom ever shows up shows up. We can advertise these on specific days between Dec and January and say that we will hold them if at least 10 people sign up. The possible dates could be: Dec 10, 11; Dec 17, 18; Jan 6,7; Jan 14, 15.

The plan for how this would be organized would be the same as the Victoria Workshop and is outlined here:  
<https://safe.nrao.edu/wiki/bin/view/ALMA/VictoriaMeetingTutorialOutline>

Pros: Easy to organize, in-house

Cons: Expense for travel and lodging for the community members.

We can offer these and see what the response is. My feeling is that if there is a local community day, I would just go there instead. If there was no community day, I would come to NRAO

**I am also checking if we can get a room at the AAS in the evenings to do a short 2-3 hr OT / NAASC overview / tutorial. We will also staff the booth at AAS and do hands-on tutorials there – probably with a pre-sign up sheet.**

### **Large 2—3 day local workshop(s)**

This would be a local workshop that could hold as many as 100-200 people. It would target novices as well as experts and intermediates. The planning for such a large tutorial workshop is already planned and available here:  
<https://safe.nrao.edu/wiki/bin/view/ALMA/EarlySciencePreparationWorkshop%282011Feb7%2c8%29>

Pros: Can reach a large number of people at once, local and can get more NAASC and IT help

Cons: Logistics require some effort, unclear whether people have money to travel for this and whether the OT alone requires a large workshop like this (but note 160 people are registered for the Grenoble Early Science workshop!)

This could be done on Dec 12—15. We have already been in contact with the Omni. Cost to the participants would be ~\$150 + travel and lodging.

My personal feeling is that we that we could do this but it might be better to leverage the expert and intermediate communities to be our natural amplifiers.

### **Web Demos/ Webinars**

The demos would be short 2-4 minute video presentations of ALMA tools. There would be one page devoted to each tool with links on how to download and install the tool. And a video demonstration on how the tool would be used. The webinars would be taped versions (streamed live and later edited) from our day long sessions. These archived sessions would be accessible in sections. If a place decided to show a webinar we could consider providing live Skype or Helpdesk support to the session.

Pros: Reaches a very wide audience.

Cons: Production of these could be quite prohibitive. 1 week per video is my estimate based on my experience with doing these for CUBISM. Helpdesk and/or Skype staffing could be difficult given our limited resources. Also there is no substitute for human interaction so these cannot completely replace NAASC staff interaction with the community.

### **Community bridges between the NAASC and the larger NA community**

Here I am proposing that we can specifically target graduate students and postdocs for a week-long visit to the NAASC. They would come to the NAASC as a group for a week and we could do 2 hr sessions with them daily. The rest of the time they would interact with NRAO staff and get to know NRAO / NAASC.

Pros: Preparing the next generation of scientists

Cons: Logistics / planning such an event will require ~ week's worth of effort; Budgeting of the visits needs to be done.