Report of the activity of the Italian ARC node for Cycle 0 Phase 1

Tutorials and outreach activities

The Italian ARC node offered several opportunities to potential ALMA users in preparation for the proposal submission for the ES cycle 0:

Tutorials on ALMA, the OT and CASA. A set of tutorials was prepared to describe the main capabilities of ALMA-ES and the basics of CASA. The tutorials also showed the tools and the documentation available to the users through the ALMA science portal. The OT and the process of proposal submission was reviewed, together with the usage of the help-desk and the ticketing system. They also showed how to use CASA for data reduction, and how to run simulations, useful for proposal preparation. In order to reach a larger audience we sent out an announcement via e-mail offering the tutorials to the community; ARC node members then presented the tutorials at the institutes that requested them. We visited 8 institutes in different cities across Italy in the period April-June. In some cases potential ALMA users took this opportunity to sit with the ARC node members to work on their proposal, instead of coming for face-to-face visits at the ARC node.

The 'Astrochemistry with ALMA' school. A 5 day COST-training school, co-organized with the Catania Astrophysical Observatory, was held at the ARC node in Bologna on June 13-17. Also in this case lectures were given by ARC-node members on how to submit proposals for ALMA ES and how to prepare simulations with CASA and the other available tools.

Face-to-face visits to the ARC node

Five users visited the ARC node and one more sought our advice via telecon (from England). We requested all the users to contact the help-desk to arrange their visit. Each was assigned to one of the ARC node members and spent a few hours learning how to prepare their proposal with the OT. All visits were arranged within the last 2 weeks before the submission deadline and 4 of them in the last week. After the visit (in a few cases also before it) the users contacted the ARC node members several times, via e-mail, skype and phone.

In some cases the users also requested support on scientific issues (e.g., how to calculate the width of a line, how to estimate the expected flux density for specific cases...).

Tickets, informal requests, and FAQ

It is quite difficult to quantify the number of requests for help we received. The ARC node members helped a large number of users via e-mail, skype or on the phone, but are also involved as co-I in 32 proposals - in which case 'help' was often given even if not explicitely asked. We noticed that people were reluctant to write help-desk tickets, unless explicitly told to do so by us, either due to diffidence, lack of time, or simply because they are not used to such a system.

We have frequently been asked very basic questions (for which it was often enough to invite the user to read more carefully the documentation available at the science portal). Some examples:

- How can I submit my proposal?
- Webstart or Tarball OT's version?
- How can I produce a pdf summary of my proposal?
- What is the largest angular scale of a source?
- Is there a format (.tex/.style) or a template to write the proposal?
- Will my proposal have 2 abstracts (one in the OT and one in the attached pdf file)?
- What should I fill in for 'line width' in continuum observations?
- What is the 'Recent Publications' section in the OT?
- Where should I attach my pdf file in the OT? (This simply requires scrolling down to the bottom of the editor page).

We also faced some more serious issues that, in some cases, have been solved with tickets. Here is a list of the most relevant ones:

Problem with temporal resolution. A ticket has been opened on behalf of users concerning the spectral sampling available for pulsar timing measurements. The original answer was that the minimum integration time for Cycle 0, given the data rate limit of 17 MB/s, is 10s. After the user discussed the problem directly with the helpdesk (ticket 1780), it was found that with an integration time of 96 ms, and the selected correlator setup, the data rate is of order of 5 MB/s, well below the maximum allowed. A clear statement about the integration time and the data rate calculation in the technical handbook would be helpful.

Issues in the OT with targets more than 15 degrees apart. A science goal with a list of sources separated by more than 15 degrees on the sky produced a warning that it might happen that the sources were going to be observed in different scheduling blocks. In the time estimate, despite the time on-source was only few minutes, the total time including calibration was of the order of days. Our suggestion was to separate the sources in different science goals. This considerably reduced the total time needed - which in itself is rather strange (could this be a bug in the OT?).
The need to define multiple science goals can be very annoying if the sample includes a large number of sources, in particular if the targets could in principle share part of the calibration (e.g. bandpass and/or flux density), needlessly increasing the total time requested for the project (except in this case, though - see above). In any case the warning should be more severe to let the user know that the science goal they created is actually not allowed, and produces a wrong estimate of the time needed.

Discrepancies between the OST and the OT sensitivity calculator in handling the Tsys. See ticket 1868: The user pointed out that the Tsys in the sensitivity calculator for Band 9 is about 1000 K while in the OST it is 341 K, the latter value being closer to the expected values given in the Technical Handbook. After suggesting to trust the sensitivity calculator we suggested the user to open a ticket to get further details. The problem was related to the way the correlator removes the signal for the unused band for the double sideband receiver, but it does not remove the noise. To handle this, the sensitivity calculator increases the Tsys, but there is no correction for this in the OST.

Misunderstanding about the peak flux density definition for spectral lines. One user wanted to detect a line with a spectral resolution (R) but knew only the expected integrated CO flux (S). They estimated the peak flux density to be entered into the OT with the following reasoning: assuming a total

linewidth (W), the peak flux is S/W. The expected peak flux density in one channel should then be: S/W*W/R. This is however not the peak flux, but the integrated flux in one channel. A clearer statement in the guide, with some examples, could help avoiding such errors.

Misunderstanding about the meaning of the 'desired sensitivity per pointing'. Several users pointed out that it wasn't clear what spectral setup had to be considered in order to define the 'desired sensitivity per pointing' in the OT, and that no example was available to clarify it. This was clarified by showing how to use the 'Bandwidth used for sensitivity' line. More examples and clear definitions on this in the guide could help the users.

Misunderstanding about the usage of the 'process as continuum' tick. Some users fixed only one baseband centered on the spectral line they were interested in and ticked the 'process as continuum' button, assuming that it means that the other 3 basebands were fixed automatically by the system in a clever way, so that it was not necessary to specify them. More detailed definitions in the user guide and some example could help also in similar cases.

We also noticed several issues with the OT (some are already known and we list them here only to point out the most serious ones):

- The webstart version of the OT has problems to access the archive on some computers. Installing the tarball is the only solution we found to avoid this problem.
- Various OT versions (i.e. running in different operating systems) and combinations with java versions have problems with printing the pdf front page correctly.
- The only way to see the total time of the project is in the pdf-file. Together with the previous item it is sometimes difficult to retrieve this crucial information. We think it should appear also somewhere in the editor screen.
- Closing the abstract editor closes also the whole OT (without saving!).
- Some information does not appear in the pdf summary (e.g., list of recent publications; related proposals).

Given the various forms in which we have provided support to the users (tutorials, school, f2f visits, e-mail, etc.), it is difficult to quantify the time dedicated to this activity. Nevertheless we can say that the last 2 weeks have been fully dedicated to proposals and user support, while the last 2 months about 50% of the time was spent in preparing for the support (e.g., preparing and presenting the tutorials, organizing the school, etc.).