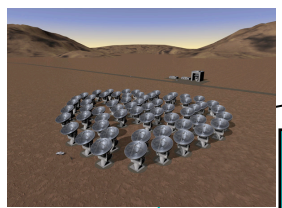


# ALMA Operations and the European ALMA Regional Centre

interaction with and support to the users

Paola Andreani

# ALMA Operations Sites in Chile



**Antenna Operations Site (AOS)**

**Operation Support Facility (OSF)**

**Santiago Central Office (SCO)**

**60 MB/s (peak)**

**6 MB/s (average)**

issues of calls  
PRC process  
SB checks  
pipeline data reduction  
quality assessment  
Population of the archive

array scheduling + operations  
quick-look, maintenance and repair



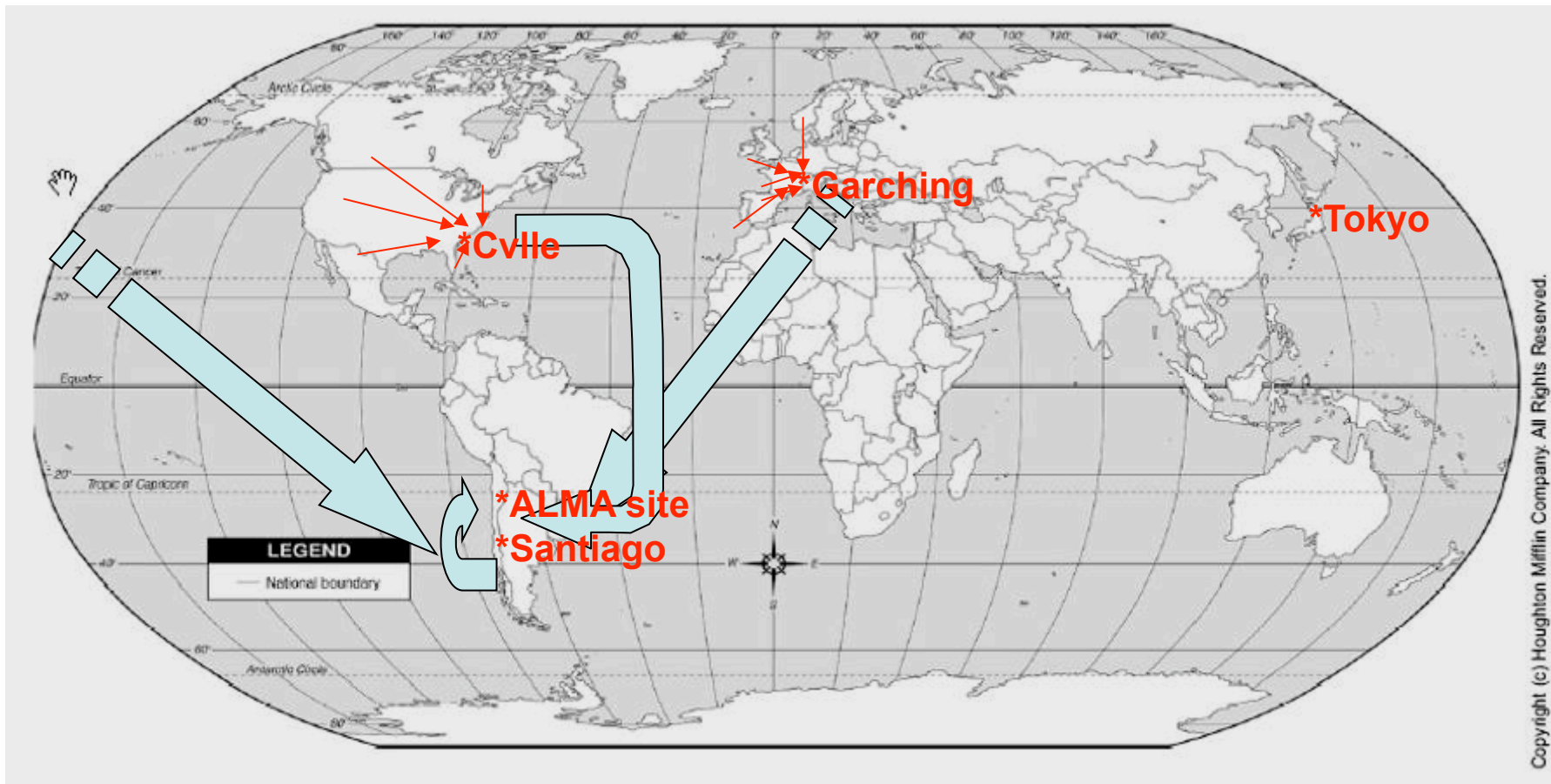
Astrochemistry school, Bologna, June 13-17 2011

# High-level concepts for Science Operations

- Observations **only** in service observing mode with flexible (dynamic) scheduling.
- Observations 24h/day interrupted by maintenance periods.
- All observations executed in the form of **scheduling blocks (SBs)**.
- Default output: reliable images, calibrated according to the calibration plan.
- The Joint ALMA Observatory (JAO) is responsible for the data product quality.
- All science and calibration raw data are captured and archived.

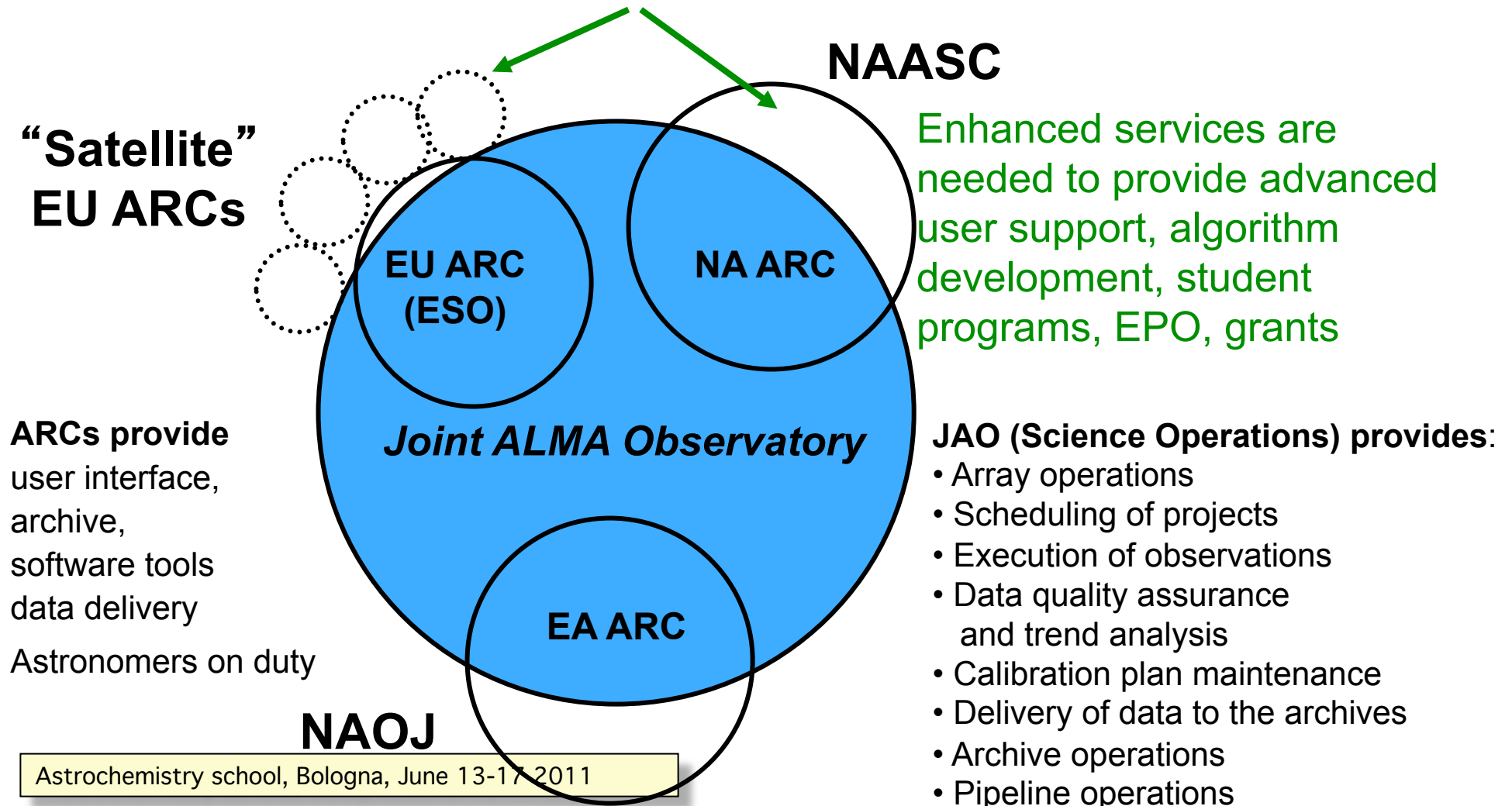
**as in the ALMA Operations Plan**

# ALMA Science Operations sites OSF, Santiago and the ARCs



# ALMA Operations: Three ALMA Regional Centres - ARCs

## Enhanced User Services



# Applying for ALMA time: The Science Portal: single sign-on



## Select instance of Science Portal

### Welcome to the ALMA Science Portal

Please select your preferred ALMA Regional Center (ARC) to access the Science Portal.

The ARCs provide the interface between ALMA and the astronomy community. They are located at NAOJ, in Mitaka, Japan for the East Asian partnership, at ESO in Garching, Germany for the European partnership and at NRAO in Charlottesville, USA for the North American partnership.





Search Site

Portals: [ESO](#) [NRAO](#) [NAOJ](#)

[Log in](#) [Register](#) [Reset password](#)

## Welcome to the ALMA Science Portal at ESO



Switch science portals

- Home
- About ALMA
- ALMA Science
- Call for Proposals
- ALMA Data
- Documents & Tools

### User Services at ARCs

- [Helpdesk](#)
- [ALMA@ESO](#)
- [ALMA@NRAO](#)
- [ALMA@NAOJ](#)

### Overview

The Atacama Large Millimeter/submillimeter Array (ALMA) is a major new facility for world astronomy. When completed in 2013, ALMA will consist of a giant array of 12-m antennas, with baselines up to 16 km, and an additional compact array of 7-m and 12-m antennas to greatly extend the range of frequencies that cover the millimeter and submillimeter spectral regions. Science observations will be carried out in a wide range of atmospheric windows between Europe, East Asia and North America. An ALMA link in the left navigation menu allows you to switch between the different instances of the portal through the links provided in the top banner.

Access ALMA user documents, tools, technical information

Access helpdesk or ARC webpages

### General News

ALMA Cycle 0 Call for Proposals is now open  
Mar 30, 2011

[More...](#)

### Local News

The Atacama Large Millimeter Array invites applications for an indefinite Staff Astronomer position.  
Feb 16, 2011

ALMA Community Days 6-7 April 2011: Towards Early Science  
Dec 17, 2010

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Leiden, Netherlands, 20-21 April 2011  
Dec 10, 2010

ESO hands over the ALMA Santiago Central Office headquarters to the Joint ALMA Observatory

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# ALMA Road Map

## ❖ ALMA Cycle 0 Proposers' guide

### ❖ Proposal planning

- ✓ Observing with ALMA: primer
- ✓ ALMA scientific calculator
- ✓ Notice of intent (it was **not mandatory**, you can still submit your proposal, valid only for cycle 0)

### ❖ Proposal preparation (Phase I)

#### ➤ ALMA Observing Tool

##### ➤ documentation:

- ✓ OT Phase I quickstart guide
- ✓ OT User Manual
- ✓ Video tutorials

#### ➤ ALMA Simulator(s): simdata + OST



# ALMA sensitivity calculator

## Sensitivity Calculator

This tool will calculate the necessary integration times for a given sensitivity (or vice versa) for your ALMA observing project. Input and output parameters are explained below. Additional information is available to users on the valid range for each parameter by hovering your mouse pointer over each field in the calculator applet (this does not currently work in Safari). [The ALMA Sensitivity Calculator Guide](#) gives a brief description of how the ASC works.

The calculator defaults to the number of antennas available during Cycle 0, but the user can select a higher number of antennas in order to compare the capability in future cycles. **The resulting integration times refer only to the on-source time and do not take any kind of overheads into account.** Furthermore, the ASC calculates the integration time/sensitivity for a single pointing. The case of pointed mosaics is discussed in the [Technical Guide](#).

A Java Plug-in must be installed in order to run the calculator. If the calculator is not displayed, then it is likely that this plug-in is not installed. Instructions for installing the plug-in may vary, depending on the browser and operating system used. A Plug-in compatible with the Java Development Kit version 1.5 or 1.6 (i.e. Java 5 or 6) is required. Users should contact their local IT department for installation help if necessary.

**Common Parameters**

Dec	<input type="text" value="00:00:00.000"/>	
Polarization	<input type="text" value="Dual"/>	<input type="button" value="v"/>
Observing Frequency	<input type="text" value="345.00000"/>	<input type="text" value="GHz"/> <input type="button" value="v"/>
Bandwidth per Polarization	<input style="color: red;" type="text" value="0.00000"/>	<input type="text" value="GHz"/> <input type="button" value="v"/>
Water Vapour Column Density	<input type="text" value="Calculator Chooses"/>	
tau/Tsky	<input type="text" value="tau=0.211, Tsky=55.786 K"/>	
Tsys	<input type="text" value="176.979 K"/>	

7m Array		Total Power Array	
<input type="text" value="0"/>		<input type="text" value="0"/>	
<input type="text" value="5.974554 arcsec"/>		<input type="text" value="14.936385 arcsec"/>	
<input type="text" value="0.00000"/>	<input type="text" value="Jy"/> <input type="button" value="v"/>	<input type="text" value="0.00000"/>	<input type="text" value="Jy"/> <input type="button" value="v"/>
<input type="text" value="0.00000"/>	<input type="text" value="K"/> <input type="button" value="v"/>	<input type="text" value="0.00000"/>	<input type="text" value="K"/> <input type="button" value="v"/>
<input type="text" value="0.00000"/>	<input type="text" value="s"/> <input type="button" value="v"/>	<input type="text" value="0.00000"/>	<input type="text" value="s"/> <input type="button" value="v"/>
Integration Time Unit Option		<input type="text" value="Automatic"/>	

Integration Time	<input type="text" value="0.00000"/>	<input type="text" value="s"/>
------------------	--------------------------------------	--------------------------------

Estimate observing time  
Customize number of antennas  
Vary conditions

Calculate Integration Time

Calculate Sensitivity

# Quick OT overview

- **OT is used to prepare ALMA proposals**
  - Scientific intent is captured in a Science Goal
    - Angular resolution, sensitivity, largest angular scale, frequencies, etc.
  - A Science Goal is designed to be novice user-friendly
- **OT is also used to prepare the telescope runfiles**
  - These are called Scheduling Blocks
    - They are automatically generated from the Science Goals
  - SBs are designed to be infinitely configurable by experts



EUROPEAN ARC

ALMA Project Tool

# The ALMA observing tool



The screenshot shows the ALMA observing tool interface for the project "REAL: Mosaic of the Sombrero galaxy (MGR real 1) (0)". The interface is divided into several panels:

- Project Structure Panel:** Located on the left, it shows a hierarchical tree view of the project structure, including "Science Goal (Sombrero) - generated", "Description", "Field Setup", "Calibration Setup Parameters", and "Control and Performance Parameters".
- Editors Panel:** Located in the center, it displays a mosaic image of the Sombrero galaxy with various editing tools and parameters. The "Editors" panel includes a "Target" section with fields for "Source Name", "Source Coordinates", "Source Velocity", "Target Type", "Field Center Coordinates", and "Coords Type".
- Template Panel:** Located at the bottom left, it provides information about the template used for the observation, including the "Image Server" and "Image Size".
- Feedback Panel:** Located at the bottom right, it displays a table of feedback items with columns for "Suggestion" and "Resource".
- Overview Panel:** Located at the bottom, it provides a high-level overview of the project and the observing program, including a flowchart of the "Phase II: Observing Program" steps: Retrieve Science Proposal, Configure System Setup, Validate Observing Program, and Submit Observing Program.

Astroch

# ALMA road map

## ❖ Proposal Review Process

- International review committee → scientific merit
- ARC/JAO staff → technical feasibility

## ❖ Phase II

- Successful PIs submit observing programme using the Observing Tool
- Preparation of the scheduling blocks
- European ARC helps with observation planning and validates observing schedule

## ❖ Observations

## ❖ Data reduction



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ALMA Regional Centre

# The ALMA observing tool



The screenshot displays the ALMA Observing Tool interface. On the left is the Project Structure tree, showing a hierarchy from Science Plan down to m82 parameters. The main window is divided into several panels: 'Receivers & LO Visualisation' showing a wide frequency spectrum (0-1000 MHz) with four baseband regions (BBC 1-4) highlighted; 'Baseband Visualisation' showing a zoomed-in view of the 200-280 MHz range; and 'Spectral Spec' on the right, which contains various configuration options like Rest Frequency (250.00000 GHz), Receiver Band (ALMA\_RB\_06), and Integration Time (0.94190 s). A table at the bottom right lists baseband configurations with columns for Name, Center Frequency, Data Product, Sidebands, and LO2 Frequency.

Name	Center Frequency	Data Product	Sidebands	LO2 Frequency
BB_1	247.000 GHz	CROSS_AND_AUTO	FREQUENCY_OFFSET_REJECTION	8.980 GHz
BB_2	249.000 GHz	CROSS_AND_AUTO	FREQUENCY_OFFSET_REJECTION	10.980 GHz
BB_3	251.000 GHz	CROSS_AND_AUTO	FREQUENCY_OFFSET_REJECTION	12.980 GHz
BB_4	253.000 GHz	CROSS_AND_AUTO	FREQUENCY_OFFSET_REJECTION	14.043 GHz

**More details on Friday**

Astrochemistry school, Bologna, June 13-17 2011




EUROPEAN ARC  
ALMA Regional Centre

# Simulating the observations: simdata



[http://casaguides.nrao.edu/index.php?title=Simulating\\_Observations\\_in\\_CASA](http://casaguides.nrao.edu/index.php?title=Simulating_Observations_in_CASA)



page discussion view source history

## Simulating Observations in CASA 3.2

(Redirected from [Simulating Observations in CASA](#))

This page is valid for CASA version 3.2. For earlier versions of CASA, please refer to [Simulating Observations in CASA 3.1](#).

Contents [hide]

- 1 Introduction
- 2 Steps to simulation
- 3 Simulating ALMA Observations
- 4 Tutorials, Recipes, and Example images
- 5 Technical and Planning

### Introduction

Simulation capability in CASA follows the usual two-layered structure: there is a beginner-level python `task` interface called `simdata`, which calls methods in the `sm` C++ tool. The task interface turns a model of the sky (2 to 4 dimensions including frequency and Stokes) into the visibilities that would be measured with ALMA, (E)VLA, CARMA, SMA, ATCA, PdB, etc. The task also can produce a cleaned image of the model visibilities, compare that image with your input convolved with the synthesized beam, and calculate a fidelity image. `simdata` can add thermal noise (from receiver, atmosphere, and ground) to the visibilities.

The `sm` tool has methods that can be used to add phase delay variations, gain fluctuations and drift, cross-polarization, and (coming soon) bandpass and pointing errors to your simulated data. `sm` also has more flexibility in adding thermal noise than `simdata`, for example for new observatories that are unknown to `simdata`.

CASA simulation uses the [aatm](#) atmospheric model, a thin wrapper of Juan Pardo's [ATM](#) library, to accurately calculate all atmospheric corruption terms (noise, phase delay) accurately as a function of frequency and site characteristics.

Part of CASA's simulation routines are generic ephemeris and geodesy calculations available in python - see [simutil.py](#).

**Note on cleaning:** just as is the case for real images, cleaning images produced by `simdata` can lead to a spurious decrease in object fluxes and noise on the image ("clean bias"). This is particularly true for observations with poor coverage of the uv-plane, i.e. using telescopes with small numbers of antennas,



# Default simdata parameters



```
CASA <5>: inp
-----> inp()
# simdata :: mosaic simulation task:
project          = 'sim'          # root for output file names
modifymodel    = False          # modify model image
  skymodel       = '$project.skymodel' # model image to observe or modify

setpointings  = True
  integration    = '10s'         # integration (sampling) time
  direction      = ''           # "J2000 19h00m00 -40d00m00" or "" to center on model
  mapsize        = ['1arcmin', '1arcmin'] # angular size of map or "" to cover model
  maptype        = 'hexagonal'   # hexagonal, square, etc
  pointingspacing = '1arcmin'    # spacing in between pointings or "" for 0,5 PB

predict       = True          # calculate visibilities using ptgfile
  complist       = ''           # optional componentlist to observe with skymodel
  compwidth      = '2GHz'       # optional bandwidth if simulating from components only
  antennalist    = 'alma,out10,cfg' # antenna position file or "" for no interferometric MS
  refdate        = '2012/05/21/22:05:00' # time/date of observation *see help
  totaltime      = '7200s'      # total time of observation
  caldirection   = ''           # pt source calibrator [experimental]
  calflux        = '1Jy'        #
  sdantlist      = ''           # single dish antenna position file or "" for no total power MS
  sdant          = 0            # single dish antenna index in file

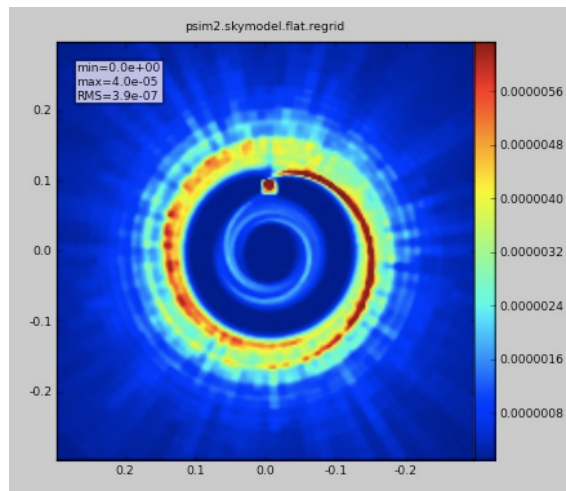
thermalnoise = ''            # add thermal noise; [tsys-atmltsys-manual""]
leakage          = 0.0          # cross polarization
image         = False         # (re)image $project.ms to $project.image
analyze       = False         # (only first 6 selected outputs will be displayed)
graphics         = 'screen'     # display graphics at each stage to [screen|file|both|none]
verbose          = False        #
overwrite        = False        # overwrite files starting with $project
async            = False        # If true the taskname must be started using simdata(...)
```

A  
CASA <6>: □

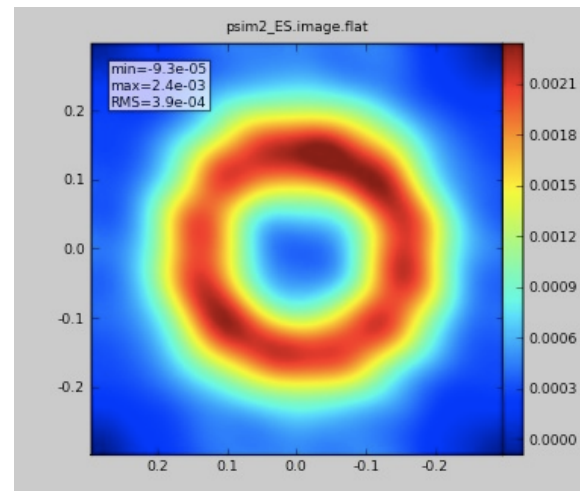


# Simulating the data Proto-planetary disk (ALMA band 9)

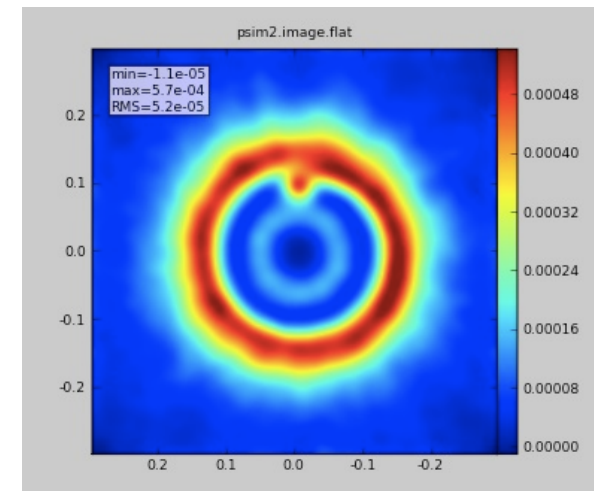
**A simulation by Sebastian Wolf (Wolf and D'Angelo 2005)**



Skymodel



Early Science  
(30 min)



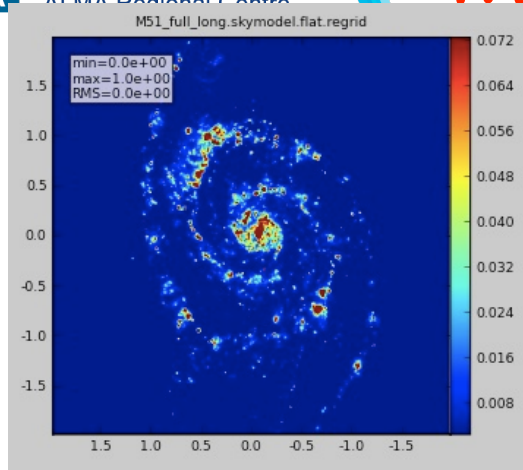
Full Array  
(10 mins)



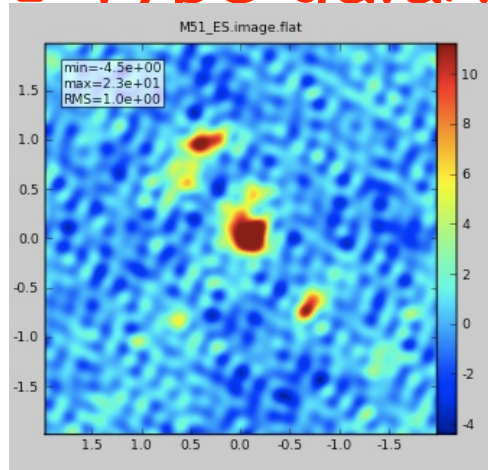


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ALMA Regional Centre

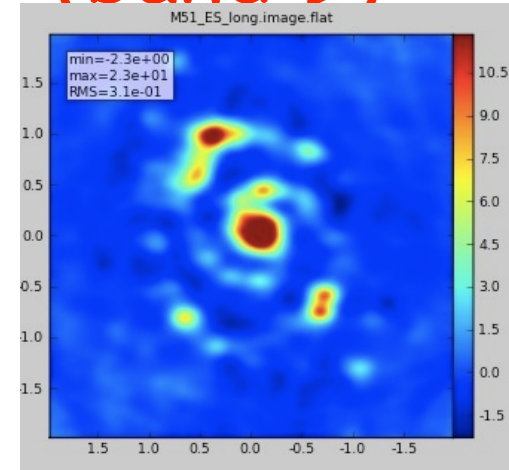
# Simulating the data M51-type galaxy (band 9)



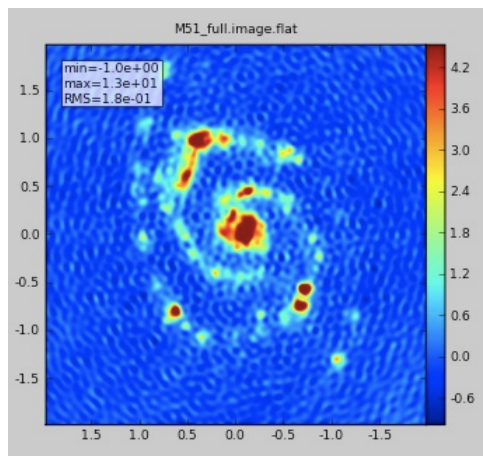
Skymodel



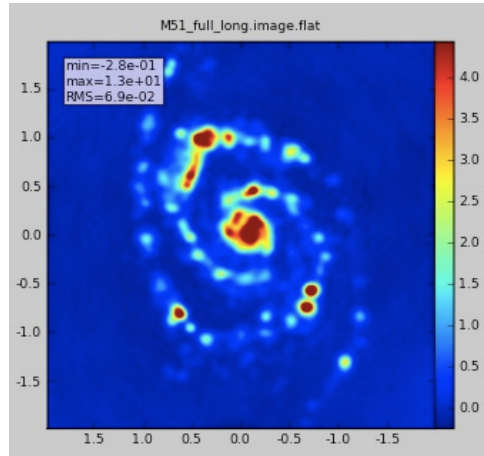
ES (30 min)



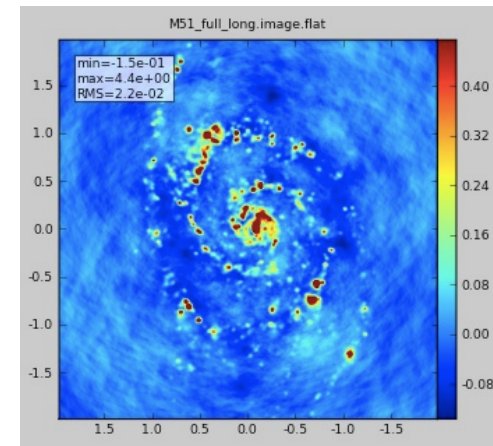
ES (4h)



Full 2 km array (30 min)



Full 2 km array (4h)



Full 6 km array (4h)



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ALMA

# The OST (Observation Support Tool)



ALMA observation support tool

http://almaost.jb.man.ac.uk/

ADS astro-ph ESO ESO-ERP ESO Phonetist ARC TWiki ARC internal TWiki ALMA Science IPT ALMASW ALMA Sim Library SciOpsWiki SERVS casa/osx\_distro DesignDocuSummary

ALMA observation support tool

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ALMA Regional Centre || UK

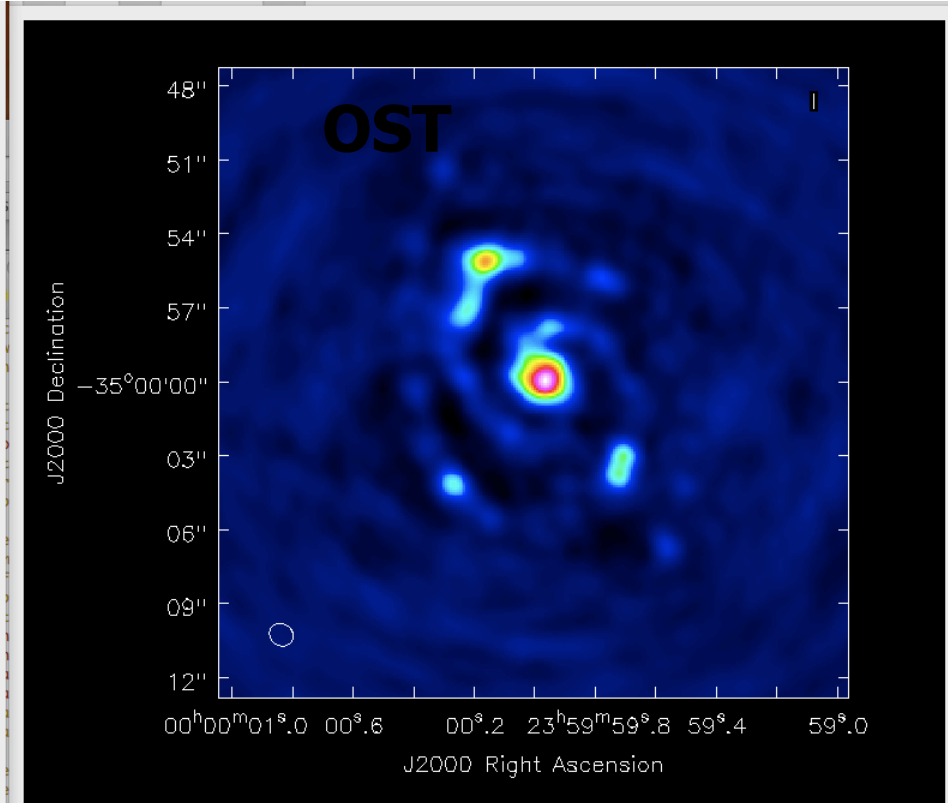
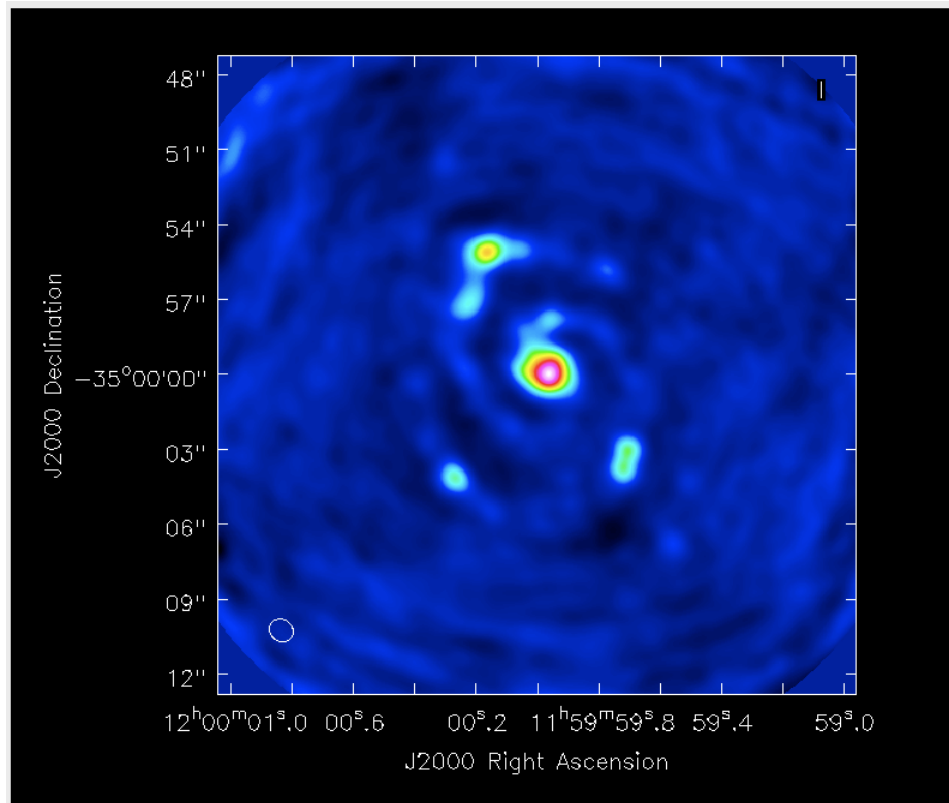
ALMA Observation Support Tool

<b>Array</b>	Instrument	ALMA	<a href="#">Queue Status</a> • <a href="#">Help</a>
<b>Sky Setup</b>	Source model	OST Library: Central point source	Choose a library source model or supply your own
	Upload a FITS file	<input type="text"/> <a href="#">Browse...</a>	You may upload your own model here (max 5MB)
	Declination	-35d00m00.0s	Ensure correct formatting of this string
	Image peak / point flux in <b>mJy</b>	0.0	Set to 0.0 for no rescaling of source model
<b>Observation Setup</b>	Central frequency in GHz	90	The value entered must be within an ALMA band
	Bandwidth in <b>MHz</b>	32	Use broad for continuum, narrow for single channel
	Required resolution in arcseconds	1.0	OST will choose config if instrument is set to ALMA
	Pointing strategy	Single	Selecting single will apply primary beam attenuation
	Start hour angle	0.0	Deviation of start of observation from transit
	On-source time in <b>hours</b>	3	Maximum duration is 24 hours
	Number of visits	1	How many times the observation is repeated
	Number of polarizations	2	This affects the noise in the final map
<b>Corruption</b>	Atmospheric conditions	Good (PWV = 0.5 mm)	Determines level of noise due to water vapour
<b>Imaging</b>	Imaging weights	Natural	This allows a resolution / sensitivity trade-off
	Perform deconvolution?	No (Return dirty image)	Apply the CLEAN algorithm to deconvolve the image
	Output image format	FITS	CASA format images are returned as a tar file
	Your email address is	essential!	<a href="#">Submit</a>

Astrochem

Done

## simdata



## M51@z=0.5, Early Science configuration, band 6



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# Accessing the Helpdesk



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http://www.almascience.eso.org/

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Atacama Large Millimeter/Submillimeter Array  
In search of our Cosmic Origins

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Overview

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ALMA, a worldwide collaboration

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ALMA Atacama Large Millimeter/Submillimeter Array  
In search of our Cosmic Origins

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Info Welcome! You are now logged in.

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Mar 30, 2011  
[More...](#)

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Feb 16, 2011

ALMA Community Days 6-7  
April 2011: Towards Early Science  
Dec 17, 2010

ESO Takes Delivery of State-of-the-art Receiver  
Dec 15, 2010

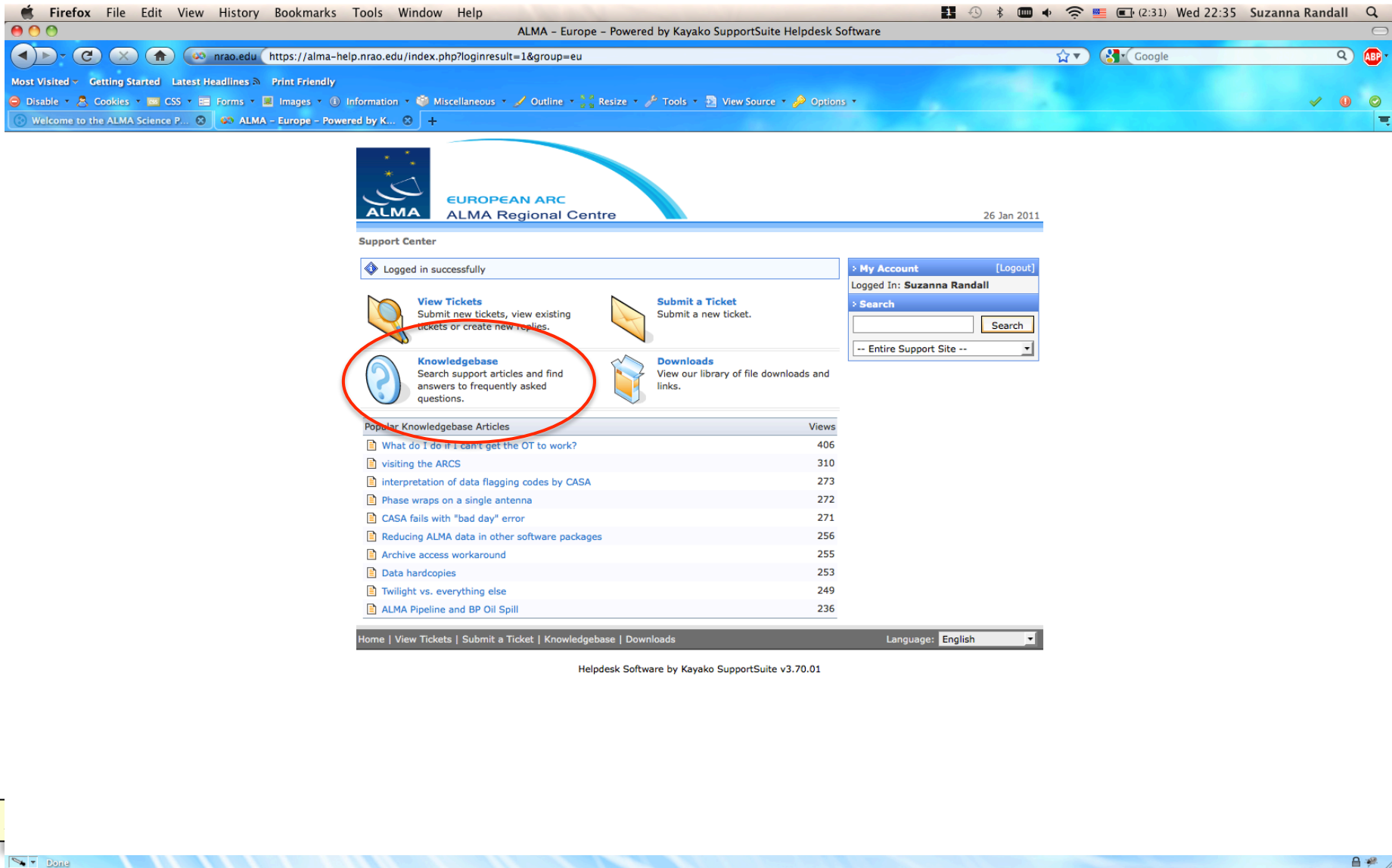
Dutch ALMA Workshop, Leiden, Netherlands, 20-21 April 2011  
Dec 10, 2010

ESO hands over the ALMA Santiago Central Office headquarters to the Joint ALMA Observatory  
Nov 05, 2010  
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# Accessing the Helpdesk

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nrao.edu https://alma-help.nrao.edu/index.php?loginresult=1&group=eu

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ALMA EUROPEAN ARC ALMA Regional Centre 26 Jan 2011

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Logged In: Suzanna Randall

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Twilight vs. everything else	249
ALMA Pipeline and BP Oil Spill	236

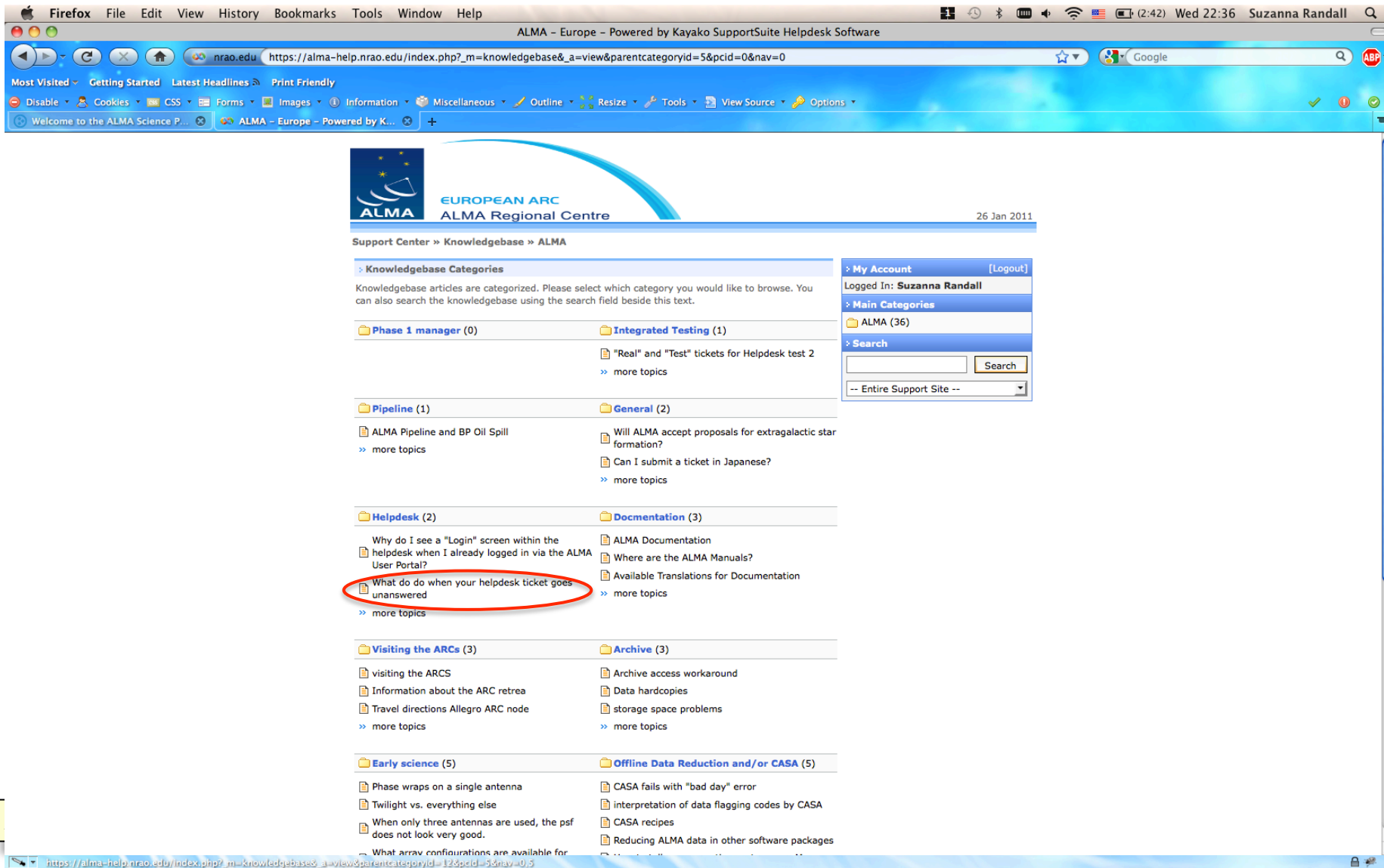
Home | View Tickets | Submit a Ticket | Knowledgebase | Downloads

Language: English

Helpdesk Software by Kayako SupportSuite v3.70.01

Done

# The Knowledgebase

Firefox File Edit View History Bookmarks Tools Window Help

ALMA - Europe - Powered by Kayako SupportSuite Helpdesk Software

nrso.edu https://alma-help.nrao.edu/index.php?m=knowledgebase&a=view&parentcategoryid=5&pcid=0&nav=0

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Welcome to the ALMA Science P... ALMA - Europe - Powered by K...

EUROPEAN ARC  
ALMA Regional Centre

26 Jan 2011

Support Center » Knowledgebase » ALMA

Knowledgebase Categories

Knowledgebase articles are categorized. Please select which category you would like to browse. You can also search the knowledgebase using the search field beside this text.

Phase 1 manager (0) Integrated Testing (1)

"Real" and "Test" tickets for Helpdesk test 2  
» more topics

Pipeline (1) General (2)

ALMA Pipeline and BP Oil Spill  
» more topics

Will ALMA accept proposals for extragalactic star formation?  
Can I submit a ticket in Japanese?  
» more topics

Helpdesk (2) Documentation (3)

Why do I see a "Login" screen within the helpdesk when I already logged in via the ALMA User Portal?  
What do do when your helpdesk ticket goes unanswered  
» more topics

ALMA Documentation  
Where are the ALMA Manuals?  
Available Translations for Documentation  
» more topics

Visiting the ARCs (3) Archive (3)

visiting the ARCS  
Information about the ARC retrea  
Travel directions Allegro ARC node  
» more topics

Archive access workaround  
Data hardcopies  
storage space problems  
» more topics

Early science (5) Offline Data Reduction and/or CASA (5)

Phase wraps on a single antenna  
Twilight vs. everything else  
When only three antennas are used, the psf does not look very good.  
What array configurations are available for

CASA fails with "bad day" error  
interpretation of data flagging codes by CASA  
CASA recipes  
Reducing ALMA data in other software packages

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Main Categories  
ALMA (36)

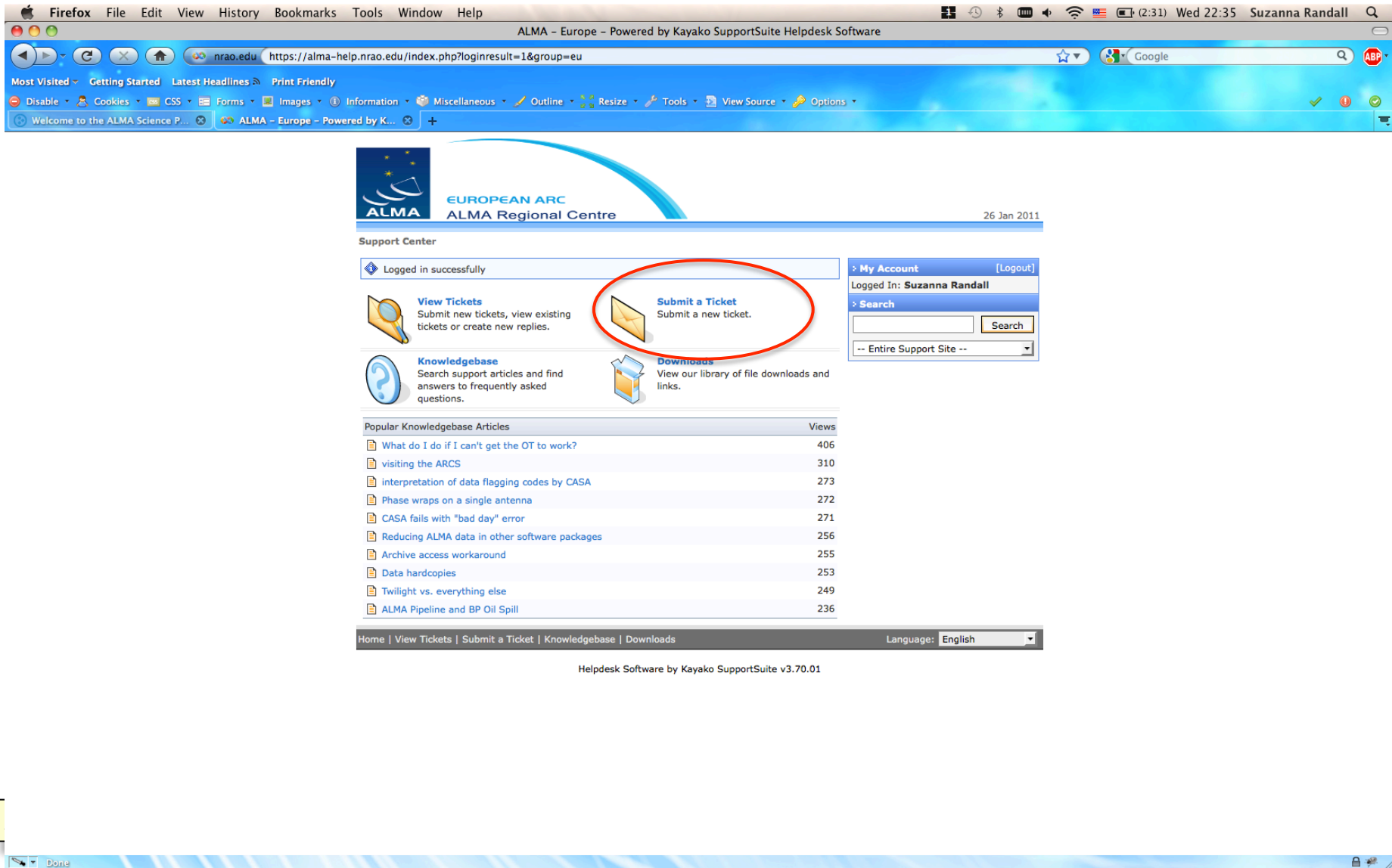
Search

Search

-- Entire Support Site --

https://alma-help.nrao.edu/index.php?m=knowledgebase&a=view&parentcategoryid=12&pcid=5&nav=0,5

# Submitting a Ticket

Firefox File Edit View History Bookmarks Tools Window Help  
ALMA - Europe - Powered by Kayako SupportSuite Helpdesk Software  
nrao.edu https://alma-help.nrao.edu/index.php?loginresult=1&group=eu  
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ALMA EUROPEAN ARC ALMA Regional Centre 26 Jan 2011

Support Center

Logged in successfully

**View Tickets**  
Submit new tickets, view existing tickets or create new replies.

**Submit a Ticket**  
Submit a new ticket.

**Knowledgebase**  
Search support articles and find answers to frequently asked questions.

**Downloads**  
View our library of file downloads and links.

**My Account** [Logout]  
Logged In: **Suzanna Randall**

**Search**  
[Search]  
-- Entire Support Site --

Popular Knowledgebase Articles	Views
What do I do if I can't get the OT to work?	406
visiting the ARCS	310
interpretation of data flagging codes by CASA	273
Phase wraps on a single antenna	272
CASA fails with "bad day" error	271
Reducing ALMA data in other software packages	256
Archive access workaround	255
Data hardcopies	253
Twilight vs. everything else	249
ALMA Pipeline and BP Oil Spill	236

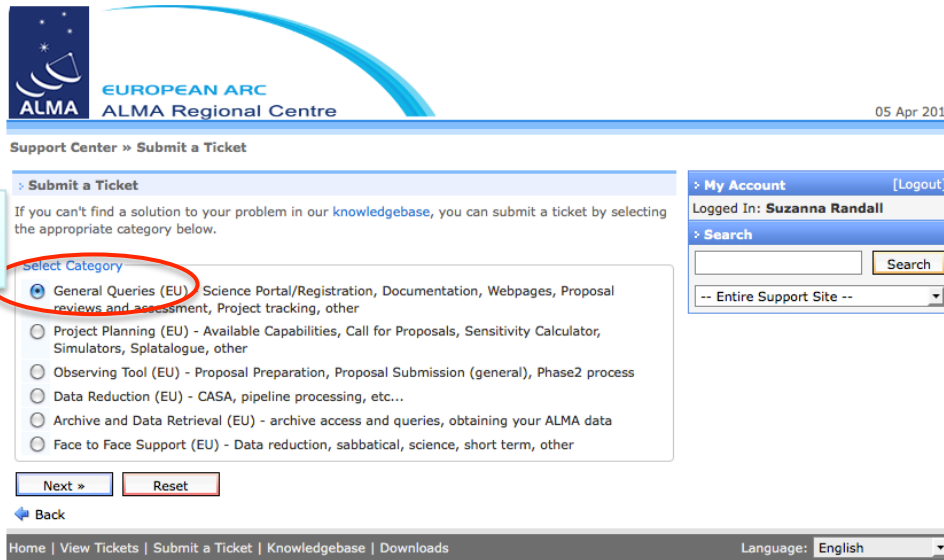
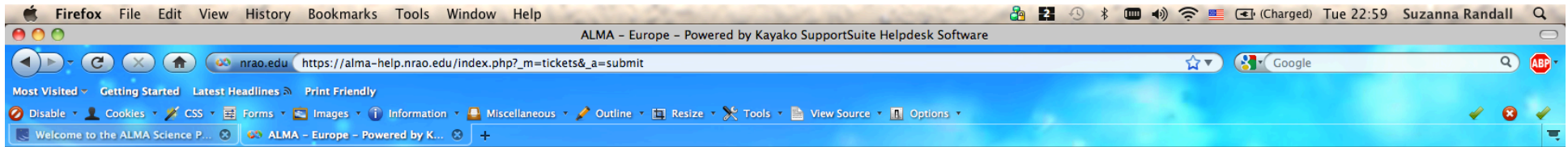
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Done



# Submitting a Ticket



Support Center » Submit a Ticket

05 Apr 2011

Submit a Ticket

If you can't find a solution to your problem in our knowledgebase, you can submit a ticket by selecting the appropriate category below.

Select Category

- General Queries (EU) - Science Portal/Registration, Documentation, Webpages, Proposal reviews and assessment, Project tracking, other
- Project Planning (EU) - Available Capabilities, Call for Proposals, Sensitivity Calculator, Simulators, Splatologue, other
- Observing Tool (EU) - Proposal Preparation, Proposal Submission (general), Phase2 process
- Data Reduction (EU) - CASA, pipeline processing, etc...
- Archive and Data Retrieval (EU) - archive access and queries, obtaining your ALMA data
- Face to Face Support (EU) - Data reduction, sabbatical, science, short term, other

Next >    Reset

Back

Home | View Tickets | Submit a Ticket | Knowledgebase | Downloads    Language: English

Chose the subject

Submit a ticket for a face to face visit

# Guidelines

**Tickets must be written in English**

**They should contain as much information as possible, including screenshots, problematic data sets etc.**

**You will receive an e-mail confirmation for ticket submission and e-mail alerts for any status change (e.g. a reply from a member of Staff)**

# Guidelines

Users will normally receive a reply within 2 working days, ideally answering the question  
If a resolution to a problem is not immediately available, the User will be informed or asked for more information

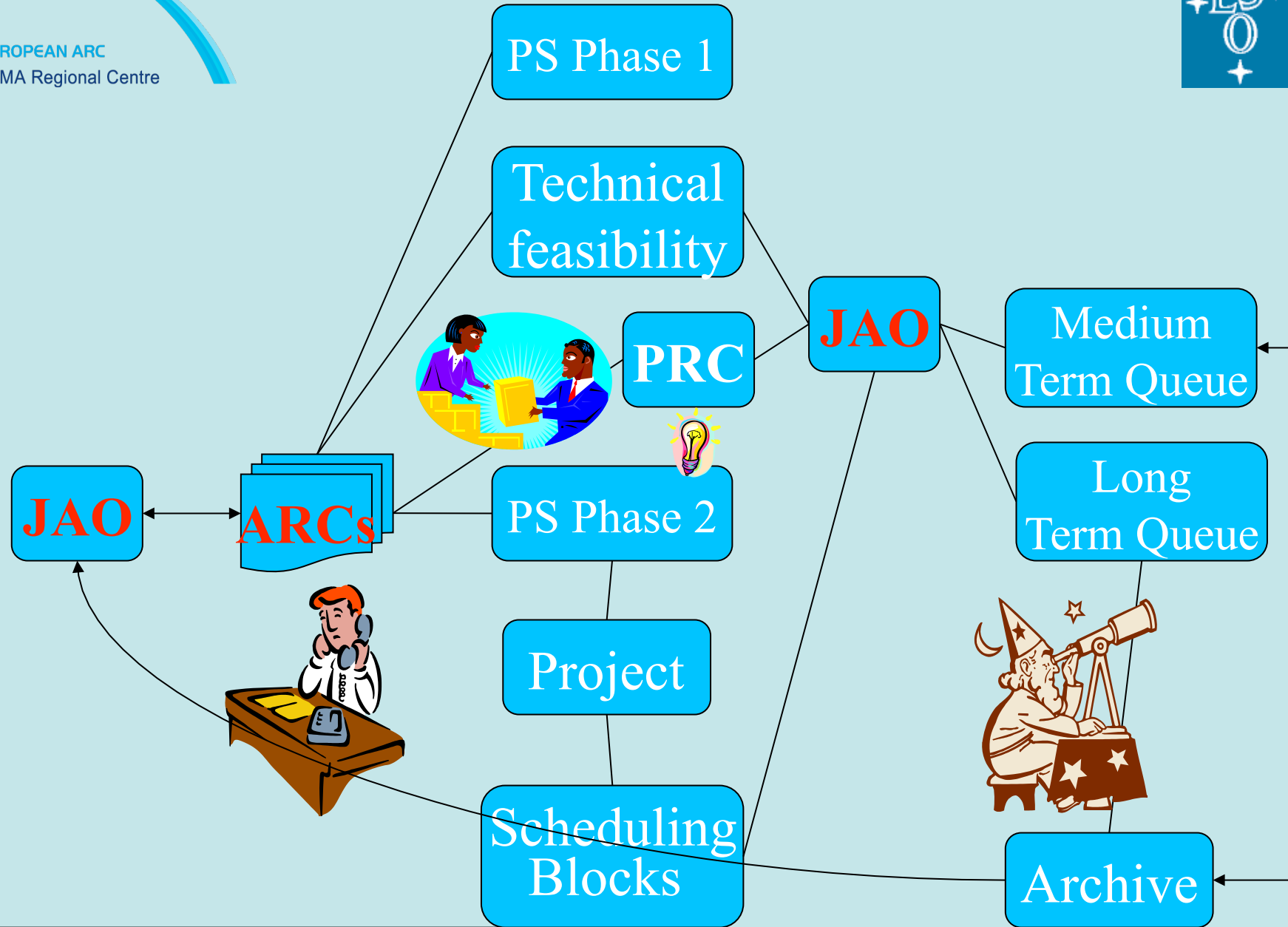
If the ticket reply is satisfactory, Users should close the ticket.

The emergency department is available only immediately before the proposal submission deadline and will be staffed 24/7



EUROPEAN ARC  
ALMA Regional Centre

# ALMA DATA FLOW



# The Project Tracker

ALMA Project Tracker (Logged as mzwaan - Roles: assessor, pi)

Project search Sched Block search Logout

Project ID	Project Code	PI Name	Name	Progress	State	Priority	Time of Creatio	Timed Out
uid://X22/X1b/X21	2010.3.00078.S	mzwaan	REAL: Blind survey for molecular absorption lines	<input type="text"/>	Phase1Submitted	0	2010-09-01	
uid://X22/X1b/X12	2010.3.00043.S	mzwaan	REAL: Gas in NGC 3256	<input type="text"/>	Phase1Submitted	0	2010-08-31	
uid://X22/X1b/X22	2010.3.00079.S	mzwaan	TRIVIAL: trivial proposal 1	<input type="text"/>	Phase1Submitted	0	2010-09-01	
uid://X22/X1b/X22	2010.3.00006.L	mzwaan	TRIVIAL: trivial proposal 2	<input type="text"/>	Phase1Submitted	0	2010-09-01	
uid://X22/X1b/X23	2010.3.00007.L	mzwaan	TRIVIAL: trivial proposal 3	<input type="text"/>	Phase1Submitted	0	2010-09-01	
uid://X22/X1b/X23	2010.3.00008.L	mzwaan	TRIVIAL: trivial proposal 4	<input type="text"/>	Phase1Submitted	0	2010-09-01	

Refresh

REAL: Gas in NGC 3256

- na
- Observing Program

**Project**

Name	REAL: Gas in NGC 3256	Id	uid://X22/X1b/X129
Code	2010.3.00043.S	Scientific Rank	1
PI name	Martin Zwaan	Letter Grade	D
Email	<a href="mailto:mzwaan@eso.org">mzwaan@eso.org</a>	Scientific Score	1.0
Creation date	2010-08-31 14:54:39	Priority	0

**Project status**

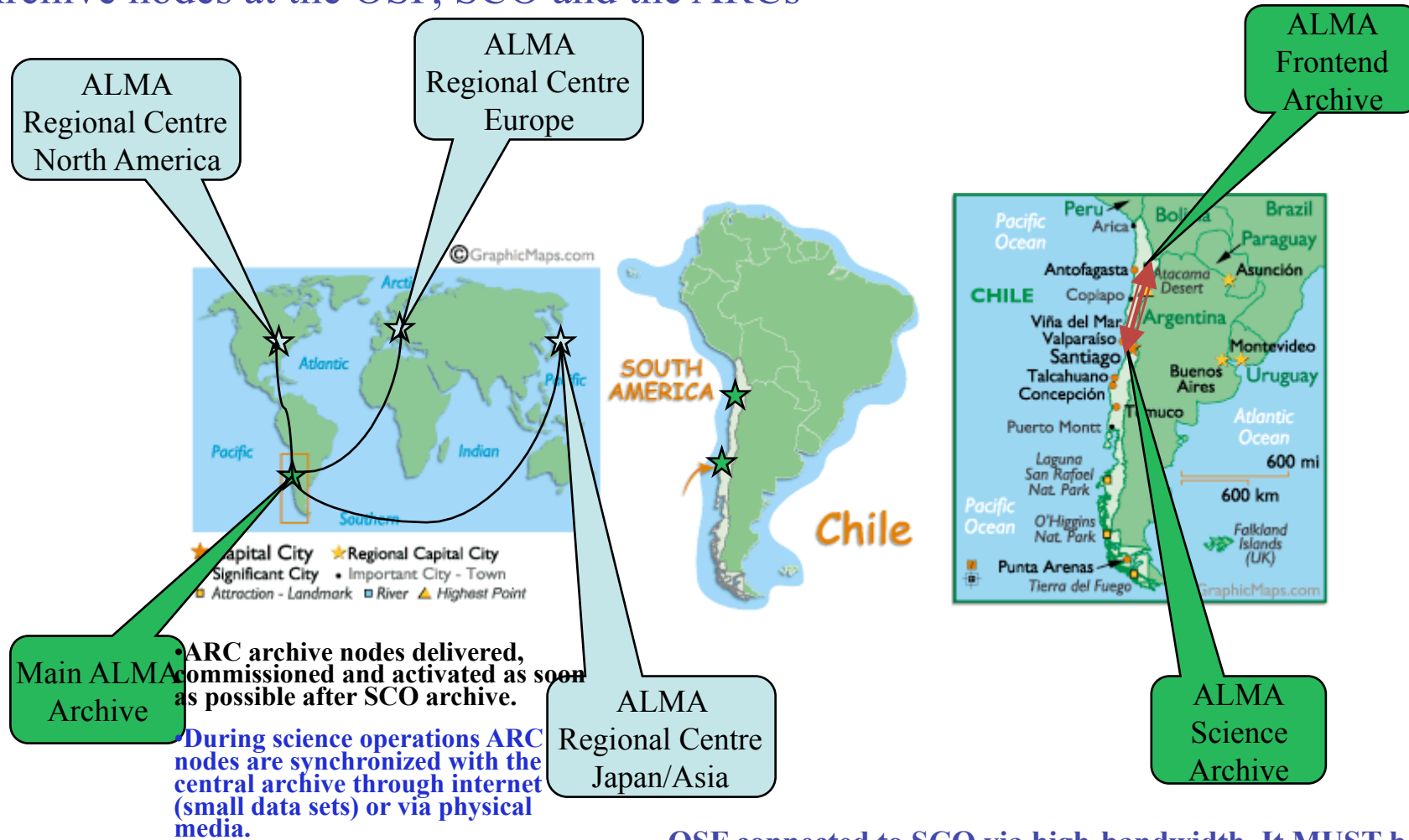
State	Phase1Submitted
Status Entity Id	uid://X22/X1b/X12c
Percent completed	<input type="text"/> 0.0%
Ready time	
Start time	
End time	
Last update time	

**Program status**

Seconds observed	<input type="text"/>	(0 of 0)
Unit sets completed	<input type="text"/>	(0 of 0)
Unit sets failed	<input type="text"/>	(0 of 0)
SBs completed	<input type="text"/>	(0 of 0)
SBs failed	<input type="text"/>	(0 of 0)

# Getting data: ALMA archives and data distribution

Archive nodes at the OSF, SCO and the ARCs



# Data Available for download and/or on media

- Available data:
  - Raw UV visibilities
  - Calibration & flagging tables
  - Casapy reduction scripts
  - Imaging products (calibrated cubes & reference images)
  - Source visibilities with calibration & flagging applied

# The ALMA offline reduction package (CASA)

```

IPy:Jupyter
CASA <3>: tget('clean')
Restored parameters from file clean.last

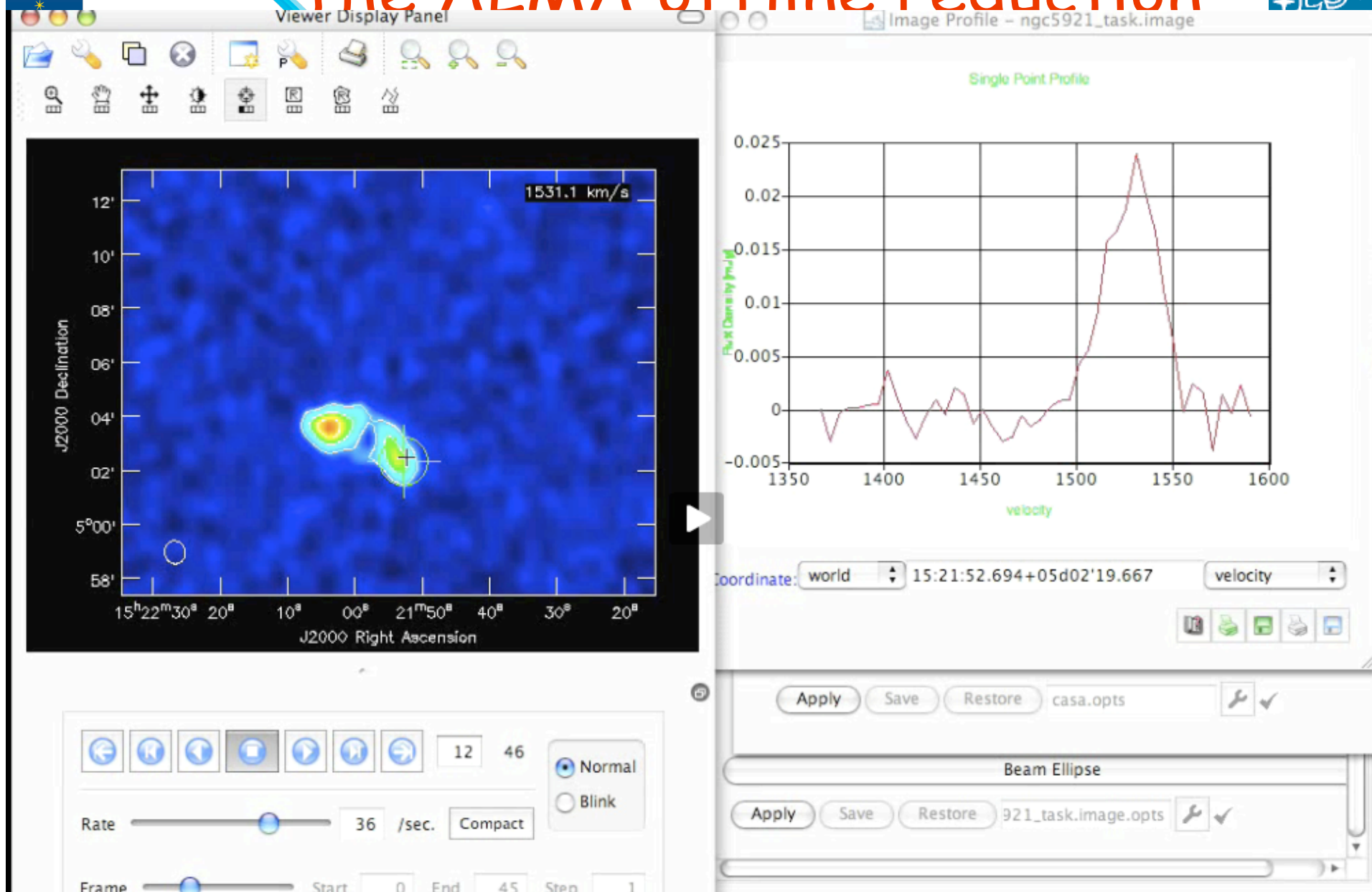
CASA <4>: inp()
# clean :: Deconvolve an image with selected algorithm
vis                = 'ngc5921.usecase.ms.contsub' # name of input visibility file
imagename         = 'ngc5921.usecase.clean' # Pre-name of output images
field             = '0' # Field Name
spw              = '' # Spectral windows;channels: '' is all
selectdata       = False # Other data selection parameters
mode             = 'channel' # Type of selection (mfs, channel, velocity, frequency)
  nchan          = 46 # Number of channels (planes) in output image
  start          = 5 # first input channel to use
  width         = 1 # Number of input channels to average

niter            = 6000 # Maximum number of iterations
gain            = 0.1 # Loop gain for cleaning
threshold       = 8.0 # Flux level to stop cleaning. Must include units
psfmode        = 'clark' # method of PSF calculation to use during minor cycles
imagermode     = '' # Use csclean or mosaic. If '', use psfmode
multiscale     = [] # set deconvolution scales (pixels), default: multiscale=[] (standard CLEAN)
interactive    = False # use interactive clean (with GUI viewer)
mask           = [108, 108, 148, 148] # cleanbox(es), mask image(s), and/or region(s) used in cleaning
imsize        = [256, 256] # x and y image size in pixels, symmetric for single value
cell          = [15.0, 15.0] # x and y cell size, default unit arcsec
phasecenter   = '' # Image phase center: position or field index
restfreq      = '' # rest frequency to assign to image (see help)
stokes        = 'I' # Stokes params to image (eg I,IV, QU,IQUV)
weighting     = 'briggs' # Weighting to apply to visibilities
  robust       = 0.5 # Briggs robustness parameter
  npixels     = 0 # number of pixels to determine uv-cell size 0=> field of view

uvtaper        = False # Apply additional uv tapering of visibilities.
modelimage    = '' # Name of model image(s) to initialize cleaning
  
```

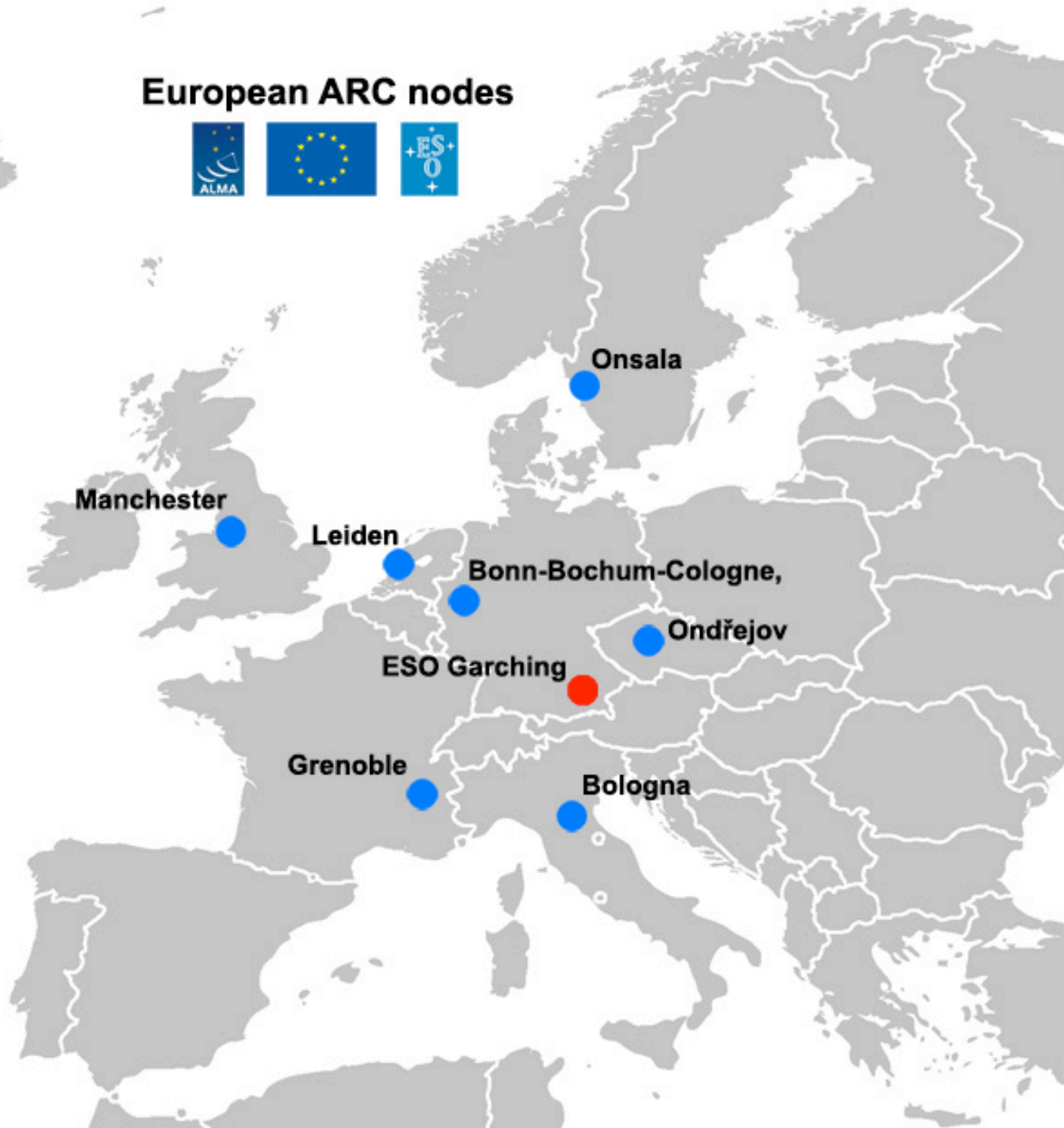


# The ALMA offline reduction



Astrochemistry school, Bologna, June 13-17 2011

## European ARC nodes



## The ALMA Regional Centre Nodes

---

- The ALMA Regional Centres (ARCs) are the **interface** between the user communities and the observatory
- The European ARC is unique for having a **distributed network of ARC nodes**
- These ARC nodes
  - have close ties with the community (active research environments)
  - host many of the mm/submm experts in Europe
  - have been preparing themselves for optimal ALMA user support!



# The ALMA Regional Centre services

ESO ARC

## Core functions

- **Scientific support services**
  - Proposal & observation preparation user support
  - Basic data analysis
  - ALMA Archive operations: host copy, data delivery
- **Astronomer on duty shifts**
- **Science community development**

- **Face-to-face help**

## Additional functions

- **Extended archive & data reduction support**
  - Advanced pipeline
  - Archival research projects
- **Support for special projects**
- **Science community development**
  - basic training, schools, workshops

ARC nodes

# Role of the ARC nodes

- Provide face to face user support
  - proposal and SBs preparation
  - data reduction,
  - archive research
- Participate in the ALMA helpdesk
- New software and techniques
- Advanced data reduction
- Scientific community development
- Public relations and outreach
- Support for special projects



# The ARC and ARC node staff



Astrochemistry school, Bologna, June 13-17 2011

# What the ARC nodes can do for you during your proposal life time

face to face help with proposal preparation

if proposal approved

face to face help with project preparation

if project observed

face to face help with data reduction

any time

Tutorials, schools, workshops

Use helpdesk

Use helpdesk

Use helpdesk

Newsletters, science portal, web pages

# Recent ARC node events

20-21 April 2011  
Early Science workshop

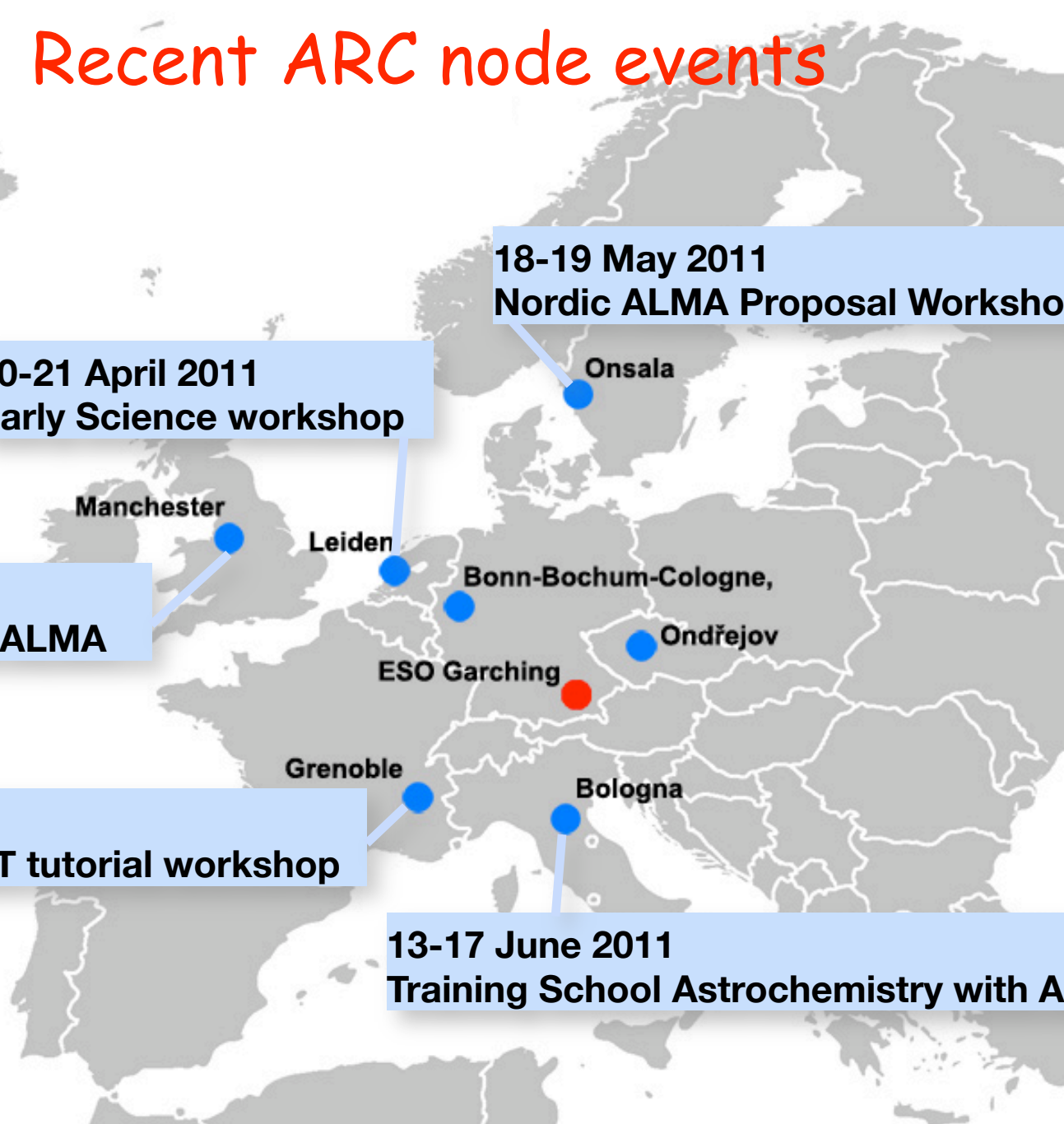
18-19 May 2011  
Nordic ALMA Proposal Workshop

4-6 June 2011  
Preparing for ALMA

24 May 2011  
ALMA proposal/OT tutorial workshop

13-17 June 2011  
Training School Astrochemistry with ALMA

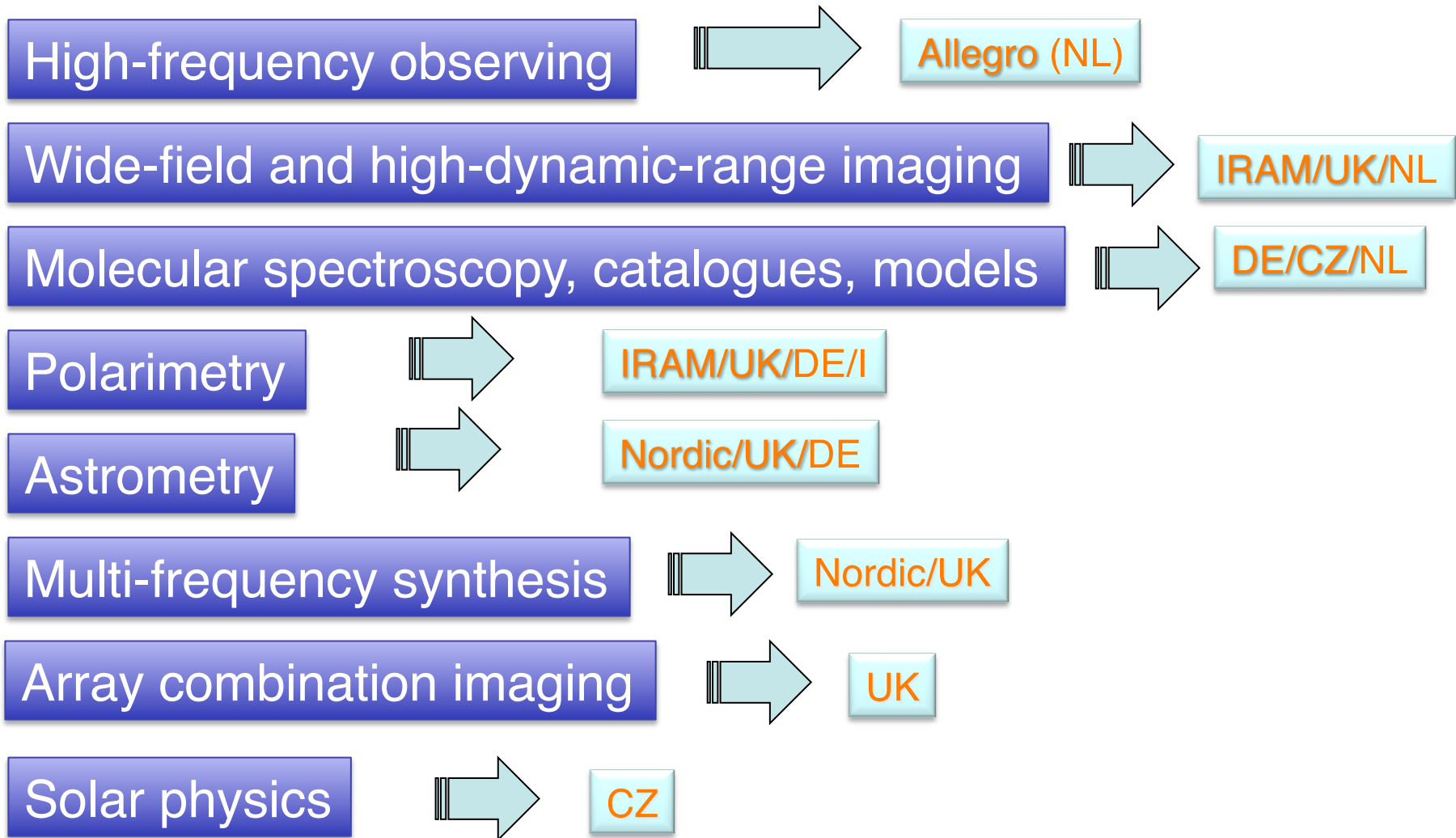
Astrochemistry school, Bolc



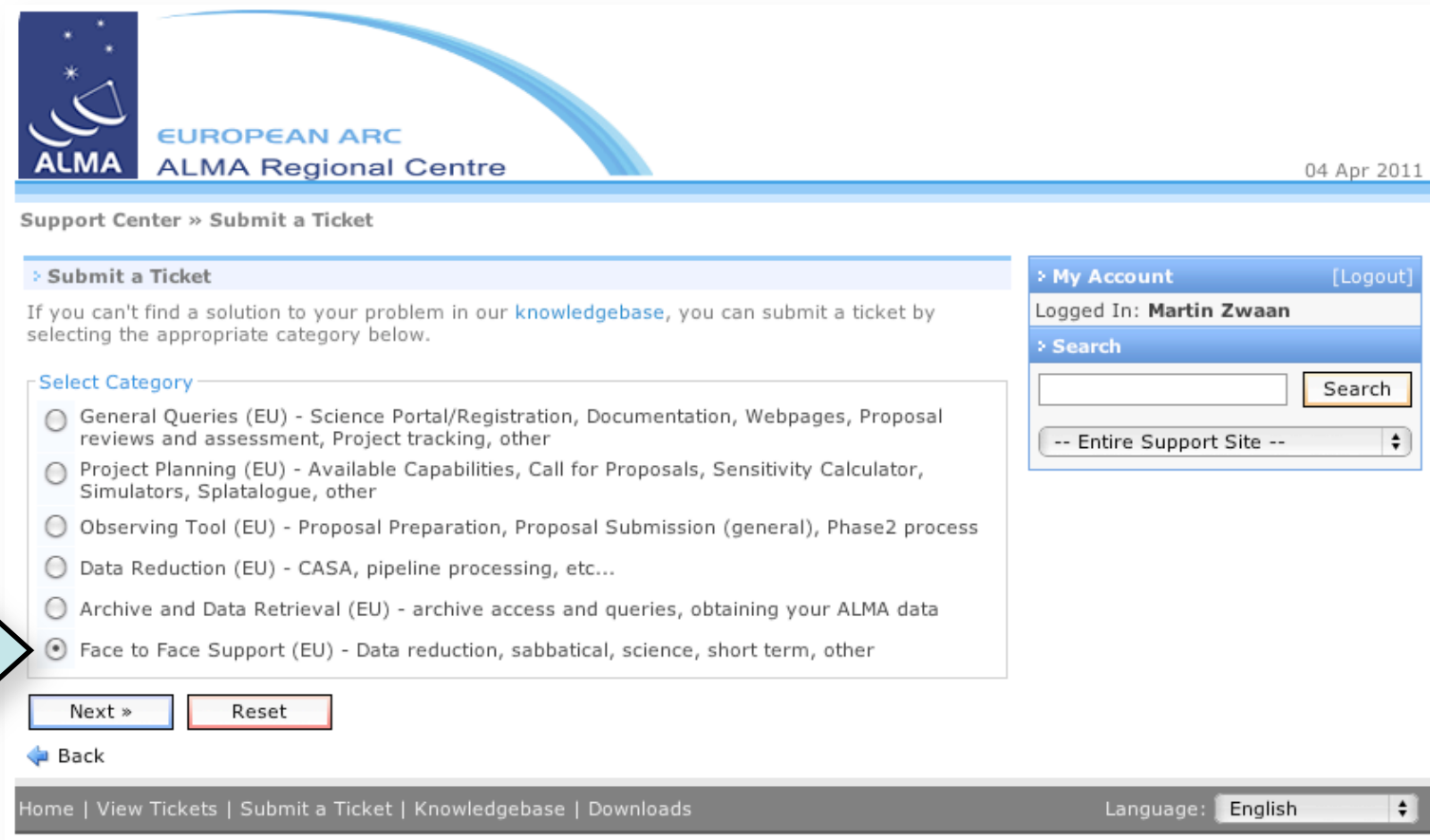


# What ARC nodes offer

- **All ARC nodes offer**
  - Computer facilities for guests
  - Accommodation in guest house or local hotels
  - Fast internet links (to Garching)
- **Funding for travel to ARC nodes:**
  - Some ARC nodes have funds available (check local web pages)
  - Funding for cross-ARC node travel available through **RADIONET**
  - In general, visiting an ARC node is like going on an observing trip



# Organise face-to-face visit through the Helpdesk



ALMA EUROPEAN ARC  
ALMA Regional Centre

04 Apr 2011

Support Center » Submit a Ticket

Submit a Ticket

If you can't find a solution to your problem in our [knowledgebase](#), you can submit a ticket by selecting the appropriate category below.

Select Category

- General Queries (EU) - Science Portal/Registration, Documentation, Webpages, Proposal reviews and assessment, Project tracking, other
- Project Planning (EU) - Available Capabilities, Call for Proposals, Sensitivity Calculator, Simulators, Splatalogue, other
- Observing Tool (EU) - Proposal Preparation, Proposal Submission (general), Phase2 process
- Data Reduction (EU) - CASA, pipeline processing, etc...
- Archive and Data Retrieval (EU) - archive access and queries, obtaining your ALMA data
- Face to Face Support (EU) - Data reduction, sabbatical, science, short term, other

Next » Reset

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Logged In: **Martin Zwaan**

Search

Search

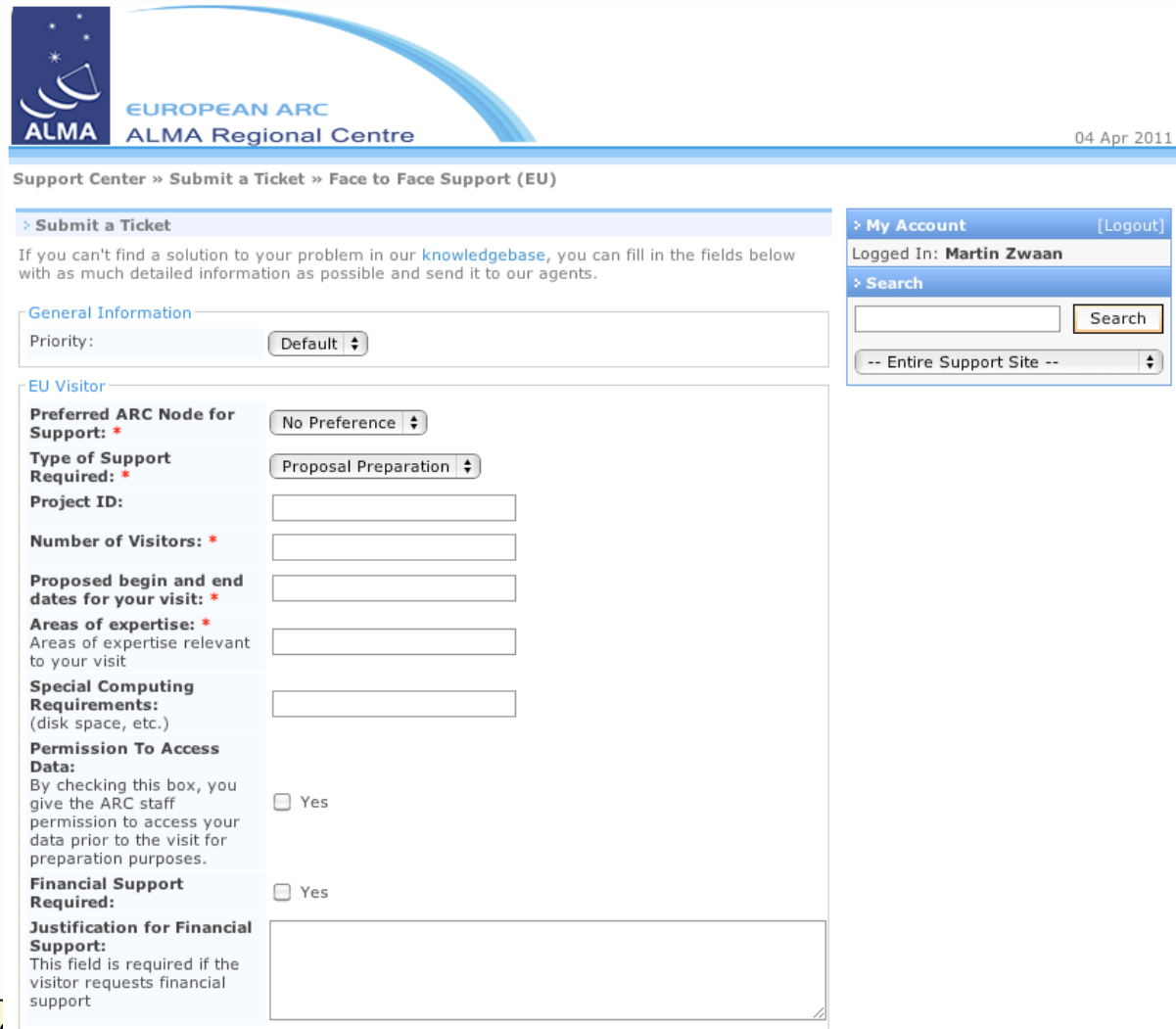
-- Entire Support Site --

Home | View Tickets | Submit a Ticket | Knowledgebase | Downloads

Language: English

# Organise face-to-face visit through the Helpdesk

**Specify the needs of your visit**



ALMA EUROPEAN ARC  
ALMA Regional Centre

04 Apr 2011

Support Center » Submit a Ticket » Face to Face Support (EU)

> Submit a Ticket

If you can't find a solution to your problem in our [knowledgebase](#), you can fill in the fields below with as much detailed information as possible and send it to our agents.

**General Information**

Priority:

**EU Visitor**

**Preferred ARC Node for Support:** \*

**Type of Support Required:** \*

**Project ID:**

**Number of Visitors:** \*

**Proposed begin and end dates for your visit:** \*

**Areas of expertise:** \*  
Areas of expertise relevant to your visit

**Special Computing Requirements:**  
(disk space, etc.)

**Permission To Access Data:**  
By checking this box, you give the ARC staff permission to access your data prior to the visit for preparation purposes.  Yes

**Financial Support Required:**  Yes

**Justification for Financial Support:**  
This field is required if the visitor requests financial support

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> Search  
   
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Astrochemistry school, Bologna, June 10-11, 2011



# Guide to the European ARC



Guide to the European ALMA Regional Centre



Version: 19 November 2010

Authors: European ARC and ARC nodes, edited by Martin Zwaan

**Available from:**

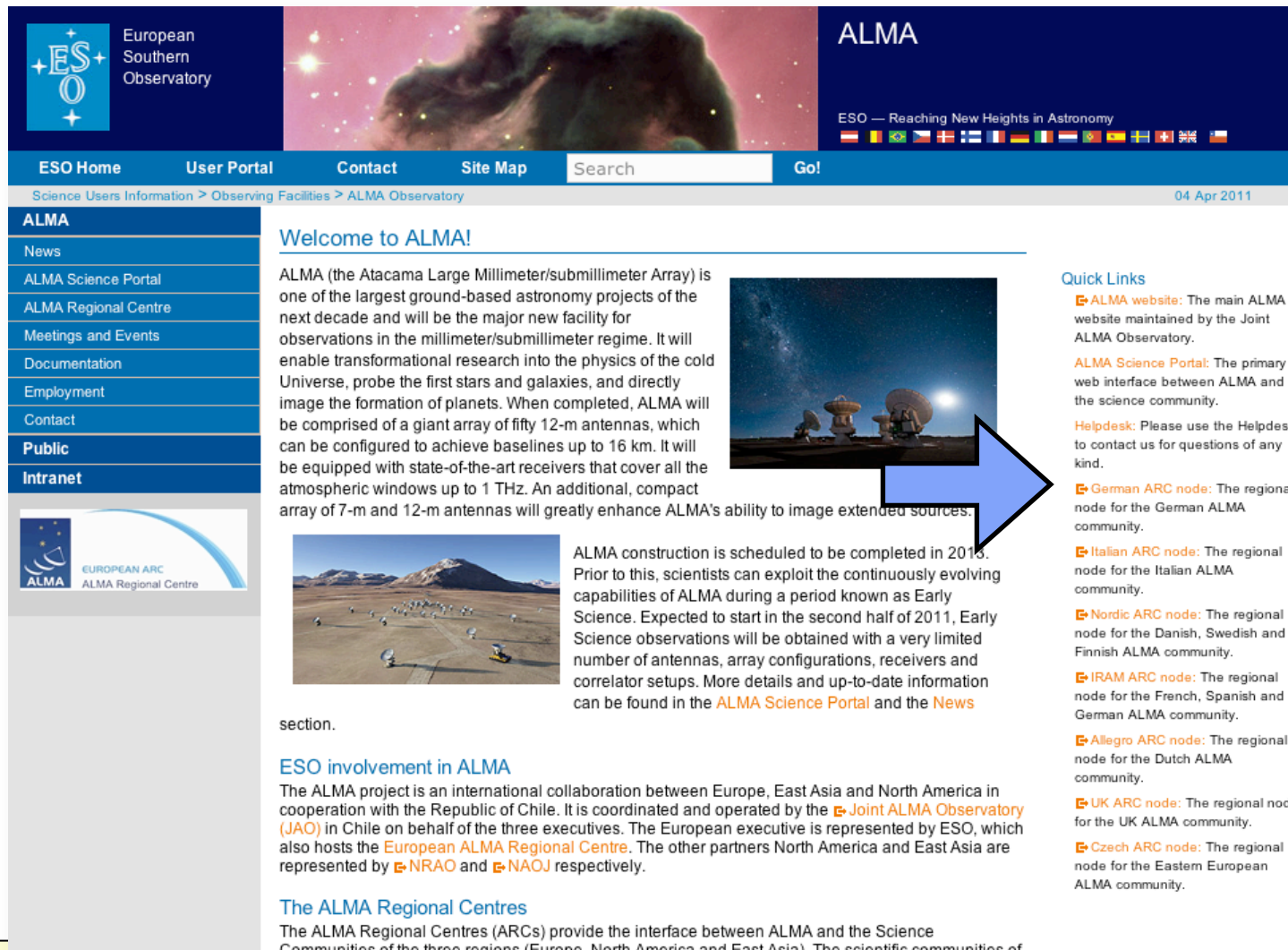
**<http://www.eso.org/sci/facilities/alma/arc/>**

Astrochemistry school, Bologna, June 13-17 2011

# Quality Assurance at the ARC nodes

- Final stage of quality assurance (QA3) is done by ARC nodes
- QA3 is post-reduction evaluation of the data products
- Represent deeper problems not been detected in tests of some specific observing modes, set-ups, etc
- If a problem is present, the ARCs will report the problem to DSO for resolution
- Depending on the steps required for resolution, it may require re-reduction of some of the data

# The ARC nodes' webpages



The screenshot shows the ALMA website homepage. At the top, there is a navigation bar with the ESO logo, the text 'European Southern Observatory', and the ALMA logo. Below this is a secondary navigation bar with links for 'ESO Home', 'User Portal', 'Contact', 'Site Map', 'Search', and 'Go!'. A breadcrumb trail reads 'Science Users Information > Observing Facilities > ALMA Observatory' and the date '04 Apr 2011' is displayed on the right.

The main content area features a 'Welcome to ALMA!' section. It includes a paragraph describing ALMA as one of the largest ground-based astronomy projects, followed by an image of the telescope array at night. A blue arrow points from this image to the 'Quick Links' section on the right. Below the welcome text is a photograph of the ALMA site during construction, with a caption stating that construction is scheduled for completion in 2013. The 'Quick Links' section lists various regional nodes and portals, each with a brief description. A sidebar on the left contains a menu with links for 'ALMA', 'News', 'ALMA Science Portal', 'ALMA Regional Centre', 'Meetings and Events', 'Documentation', 'Employment', 'Contact', 'Public', and 'Intranet'.

**Welcome to ALMA!**

ALMA (the Atacama Large Millimeter/submillimeter Array) is one of the largest ground-based astronomy projects of the next decade and will be the major new facility for observations in the millimeter/submillimeter regime. It will enable transformational research into the physics of the cold Universe, probe the first stars and galaxies, and directly image the formation of planets. When completed, ALMA will be comprised of a giant array of fifty 12-m antennas, which can be configured to achieve baselines up to 16 km. It will be equipped with state-of-the-art receivers that cover all the atmospheric windows up to 1 THz. An additional, compact array of 7-m and 12-m antennas will greatly enhance ALMA's ability to image extended sources.

ALMA construction is scheduled to be completed in 2013. Prior to this, scientists can exploit the continuously evolving capabilities of ALMA during a period known as Early Science. Expected to start in the second half of 2011, Early Science observations will be obtained with a very limited number of antennas, array configurations, receivers and correlator setups. More details and up-to-date information can be found in the [ALMA Science Portal](#) and the [News](#) section.

**ESO involvement in ALMA**

The ALMA project is an international collaboration between Europe, East Asia and North America in cooperation with the Republic of Chile. It is coordinated and operated by the [Joint ALMA Observatory \(JAO\)](#) in Chile on behalf of the three executives. The European executive is represented by ESO, which also hosts the [European ALMA Regional Centre](#). The other partners North America and East Asia are represented by [NRAO](#) and [NAOJ](#) respectively.

**The ALMA Regional Centres**

The ALMA Regional Centres (ARCs) provide the interface between ALMA and the Science Communities of the three regions (Europe, North America and East Asia). The scientific communities of

**Quick Links**

- [ALMA website](#): The main ALMA website maintained by the Joint ALMA Observatory.
- [ALMA Science Portal](#): The primary web interface between ALMA and the science community.
- [Helpdesk](#): Please use the Helpdesk to contact us for questions of any kind.
- [German ARC node](#): The regional node for the German ALMA community.
- [Italian ARC node](#): The regional node for the Italian ALMA community.
- [Nordic ARC node](#): The regional node for the Danish, Swedish and Finnish ALMA community.
- [IRAM ARC node](#): The regional node for the French, Spanish and German ALMA community.
- [Allegro ARC node](#): The regional node for the Dutch ALMA community.
- [UK ARC node](#): The regional node for the UK ALMA community.
- [Czech ARC node](#): The regional node for the Eastern European ALMA community.

# Early Science Operations: key dates



- **31 March 2011:** Release of the Call for Proposals for ALMA Early Science Cycle 0 and release of offline Observing Tool.
- **29 April 2011:** Deadline for submission of Notice of Intent.
- **15 May 2011:** Release of Cycle 0 Technical Handbook and intended schedule of compact and extended configuration availability.
- **1 June 2011:** Opening of archive for proposal submission and release of the online version of the Observing Tool.
- **30 June 2011:** Proposal submission deadline.
- **September 2011:** Feedback to proposers on the results from the proposal review process.
- **Autumn 2011:** Start of ALMA Cycle 0 observing.
- **February 2012:** One month engineering shutdown during the 2012 Altiplanic winter.
- **30 June 2012:** End of ALMA Cycle 0



# Early Science Operations



- Purpose of ALMA Early Science Cycle 0:
  - deliver scientifically useful results to the astronomy community
  - facilitate the ongoing characterization of ALMA systems and instrumentation as the capability of the array continues to grow.
- Early Science through Cycle 1 (until construction and commissioning complete)
- Priority is given to completion of the array: the time is shared with Commissioning activity.
- Projects not carried over from Cycle 0 to later cycles
- 12-month proprietary rights applicable to all ALMA data but Cycle 0 projects will not block later observations of the same targets with enhanced capabilities.
- Scheduling of SBs done by the dynamic scheduler, used in manual mode

# Best Efforts

(PIs need to be aware of)

- PIs will need to contribute to data processing and to Quality Assurance
- The proprietary time for each dataset starts as soon as that dataset is delivered. Proprietary time lasts 12 months
- No guarantee that the project will be completed
- No carry over of projects from Cycle 0 to later cycles

# Optimal projects for Cycle 0

- Well matched to Cycle 0 capability
- Scientifically worthwhile & publishable outcomes from Cycle 0 observations
- Produce images/spectra from observations of a few hours or less
- Exploit ALMA's unique capabilities

# Questions?



Thanks for your attention!  
For any questions, please contact the ALMA  
Helpdesk at [www.almascience.eso.org](http://www.almascience.eso.org)



Atacama Large Millimeter/submillimeter Array  
Observer Support