

Introduction to the ALMA Observing Tool (OT)



The ALMA-OT

The ALMA Observing Tool (ALMA-OT):

- ✓ for **proposal preparation** (phase I)
 - => Science Goals (SGs)
- ✓ for creation of the **observing program** (phase II)
 - => Scheduling Blocks (SBs)

Scheduling Blocks are created from Science Goals!

- downloaded and run locally by **webstart** (recommended) or **tarballs** for Linux, Mac and Windows
- needs **Java 8** (javaws)! *IcedTea doesn't work*
- internet connection required to access **online databases** and catalogues
- **many tools** included (name resolver, visual editors, sensitivity calculator, spectral line picker, ...)



Observatory News

Additional Information for Cycle 5
Feb 01, 2018

New Science Verification data
for download
Jan 22, 2018

Announcement of intent to release
installment of Science Verification
More...

Cycle 5 Call for Proposals

Proposing Guidance

Proposer's Guide

Cycle 5 Capabilities

Observing Tool

Sensitivity Calculator

Proposal Template

Duplicate Observations

ALMA Primer

Technical Handbook

DDT proposals

ARC News

Researcher position available at the Nordic ARC

2018

Researcher position available at the Nordic ARC

ARC Video Tutorials

European Radio Interferometry School

...

Status

ALMA Cycle 5 Config Schedule
Latest Cycle 6 Proposal News Item

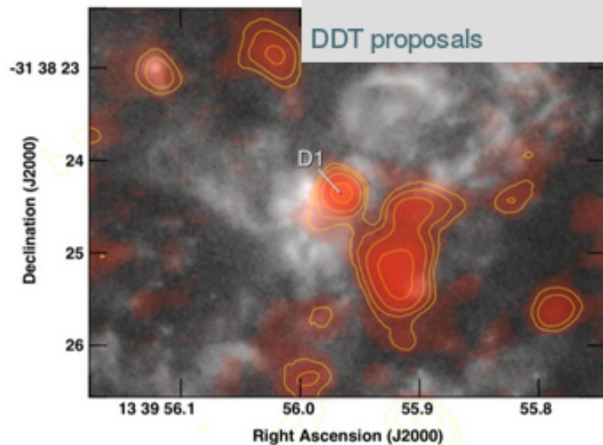
Refereed publications: 969

Last observed source: IRAS_16293-2422

Current configuration: C43-5

More...

Science Highlights - Molecular Gas



Supernebula of the Dwarf Galaxy NGC 5253

One of the areas of extragalactic research which makes great use of ALMA's resolution and sensitivity is the study of the molecular gas properties of dwarf galaxies. In a [recent study](#) by Dr. Jean Turner and her collaborators, they make use of Band 7 ALMA observations to detect warm $^{12}\text{CO}(3-2)$ and $^{13}\text{CO}(3-2)$ emission (Cloud D1) from the core of a giant star-forming region, in the dwarf galaxy NGC 5253. This "supernebula" is the source of one-third of the galaxy's infrared luminosity and is in proximity to optical clusters with measured stellar ages of ~ 1 Myr. From radio recombination line analysis, the region is estimated to have 1400-1800 O stars..

[Full Summary...](#)



Observing Tool

The ALMA Observing Tool (OT) is a Java application used for the preparation and submission of ALMA Phase 1 (observing proposal) and Phase 2 (telescope runfiles for accepted proposals) materials. It is also used for preparing and submitting Director's Discretionary Time (DDT) proposals. The current *Cycle 5* release of the OT is configured for the present capabilities of ALMA as described in the [Cycle 5 Call For Proposals](#). Note that in order to submit proposals you will have to register with the ALMA Science Portal beforehand.

Note that preparation of Cycle 4 DDT proposals needs to be done using the Cycle 4 version of the Observing Tool. This version of the OT can be found in the [DDT page](#), or the Phase 2 menu.

Download & Installation

The OT will run on most common operating systems, as long as a **64-bit version of Java 8** is installed (see the [troubleshooting page](#) if you are experiencing Java problems). The ALMA OT is available in two flavours: Web Start and tarball.

The **Web Start** application is the recommended way of using the OT. It has the advantage that the OT is automatically downloaded and installed on your computer and it will also automatically detect and install updates. There are some issues with Web Start, particularly that it does not work with the Open JDK versions of Java such as the "Iced Tea" flavour common on many modern Linux installations. The Oracle variant of Java should therefore be installed instead. If this is not possible, then the tarball installation of the OT is available.

The **tarball** version must be installed manually and will not automatically update itself, however there should be no installation issues. For Linux users, we also provide a download complete with a recommended version of the Java Runtime Environment. Please use this if you have any problems running the OT tarball with your default Java.



Documentation [button_webstart](#)

Extensive documentation is available to help you work with the OT and optimally prepare your proposal:

- If you are a novice OT user you should start with the [OT Quickstart Guide](#), which takes you through the basic steps of ALMA proposal preparation.
- Audio-visual illustrations of different aspects of the OT can be found in the [OT video tutorials](#). These are recommended for novices and advanced users alike.



Web Start Download Page



Click logo to start.



Click the OT Logo to start the OT. If the OT has not been downloaded before, or if an update has been released, a download window will appear. For first-time users, after the download has completed, you may (depending on your operating system) be given the option to create a shortcut, or one will be created automatically for you, usually on the desktop. Future use of the OT can then most conveniently be started by double-clicking the shortcut. Even if a shortcut is not created, the OT will have been downloaded into the Web Start cache and can be started from the Java Cache Viewer (accessible using 'javaws -viewer' or from Java Preferences on a Mac).

USEFUL TO KNOW

- The Web Start will automatically detect if an update to the installed version of the OT has been released and will automatically download it.
- If a network connection is not available, the Web Start version will still work, but will obviously not be able to update itself or use the OT's external services such as the user database, online spectral line search, etc.

The ALMA-OT

File Edit View Tool Search Help Perspective 1

Project Structure

- Proposal
 - Unsubmitted Proposal
 - Project
 - Proposal
 - Planned Observing
 - ScienceGoal (Copy of Bright molecular gas tracers in NGC1232: 12CO, HCO+, HCN : Band 7)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial ScienceGoal (Copy of Bright molecular gas tracers in NGC1232: 12CO, HCO+, HCN : Band 7)

General (Optional)

Science Goal Name: Copy of Bright molecular gas tracers in NGC1232: 12CO, HCO+, HCN : Band 7

Description:

This template focuses on the 12CO(3-2), and HCO+/HCN (4-3) transitions in band 7. In this case, the target is the very inner core of NGC1232, and Total power data are required.

An additional baseband is configured to sample continuum, to aid calibration and to constrain dust temperature.

This template can be used in conjunction with band 3 or 6 (See also the template for band 10) to more completely sample the CO, HCO+ HCN J-transition ladder, and significantly constrain radiative transfer analysis.

While the interval for the sensitivity calculation is 10 km/s, the requested resolution is much lower, to explore any bright, low-velocity width components.

NGC1232

Source

Source Name: NGC1232 Resolve

Choose a Solar System Object? Name of object: Unspecified

System: ICRS Sexagesimal display?

Source Coordinates

RA: 03:09:45.5140 Parallax: 0.00000 mas

Dec: -20:34:45.480 PM RA: 0.00000 mas/yr

PM DEC: 0.00000 mas/yr

Source Radial Velocity: 1677.400 km/s z: 0.005610945 Doppler Type: RELATIVISTIC

Target Type: Individual Pointing(s) 1 Rectangular Field



Feedback

Validation Validation History Log

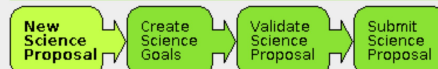
Description	Suggestion

Overview

Contextual Help

- Please ensure you and your co-Is are registered with the [ALMA Science Portal](#)
- Create a new proposal by either:
 - Selecting **File > New Proposal**
 - Clicking on the  icon in the toolbar
 - Or clicking on this [link](#)
- Click on the  **proposal** tree node and complete the relevant fields.

Phase I: Science Proposal





Click on the overview steps to view the contextual help



Overview panel:
Guides a user through the various steps
required at both Phase I and II

Contextual Help

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 - Or clicking on this [link](#)
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Phase I: Science Proposal

New Science Proposal → Create Science Goals → Validate Science Proposal → Submit Science Proposal

Click on the overview steps to view the contextual help

Importing And Exporting | Template Library | Need More Help? | View Phase 2 Steps

The Project Structure:
Shows the structure of your proposal/project including the template library (optional)

Proposal Information

Proposal Title: H0 to five decimal places

Proposal Cycle: 2011.0

Abstract (max. 300 words): No, seriously!

Scientific Category:

- Cosmology and the High Redshift Universe
- Galaxies and Galactic Nuclei
- ISM/Astrochemistry/Star Formation/protoplanetary disks/exoplanets
- Stellar Evolution/the Sun and the Solar System

Proposal Type: Standard

Continuation: (Not Applicable)

Feedback: 0 errors, 0 warnings

Contextual Help:

- Please ensure you and your co-Is are registered with the [ALMA Science Portal](#)
- Create a new proposal by either:
 - Selecting *File > New Proposal*
 - Clicking on the icon in the toolbar
 - Or clicking on this [link](#)
- Click on the proposal tree node and complete the relevant fields.

Phase I: Science Proposal

New Science Proposal → Create Science Goals → Validate Science Proposal → Submit Science Proposal

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H0 to five decimal places - Observing Tool for ALMA, version Cycle0

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

- H0 to five decimal places
 - Proposal
 - Planned Observing
 - Science Goal
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance

Unsubmitted Proposal (read-only)

Template library. Turn the keys on the JTree below & re...

Proposal

- Planned Observing
 - B3 spectral sweep CO (9-8): COSMOS SMGs
 - B7 continuum: COSMOS SMGs
 - B7 CO(9-8): Cosmic Eyelash (z=2.326)
 - B9 continuum: Cosmic Eyelash (z=2.326)
 - B3 spectral sweep: PKS1830-211 (z=0.9)
 - B3 continuum: GRB ToO: days 0 to 14
 - B6 continuum: GRB ToO: days 0 to 14
 - B7 continuum: GRB ToO: days 0 to 14
 - B6 continuum: GRB ToO: day 17
 - B3 continuum: GRB ToO: day 30
 - B6 12CO (2-1): NGC3256 mosaic
 - B6 13CO (2-1): NGC3256
 - B6 spectral line: Massive Protostellar Cluster
 - B9 spectral line: Massive Protostellar Cluster r...
 - B3 continuum: Protostellar Disks
 - B6 continuum: Protostellar Disks
 - B7 continuum: Protostellar Disks

Editors

Spectral Spatial Proposal

Proposal Information

Proposal Title: H0 to five decimal places

Proposal Cycle: 2011.0

Abstract (max. 300 words): No, seriously!

Launch Editor

Scientific Category

Cosmology and the High Redshift Universe
 Galaxies and Galactic Nuclei
 ISM/Astrochemistry/Star Formation/protoplanetary disks/exoplanets
 Stellar Evolution/the Sun and the Solar System

Proposal Type

Standard
 Target Of Opportunity

Student Project

Continuation (Not Applicable)

Related Proposals

Feedback

Problems Information Log

0 errors, 0 warnings

No problems found

Suggestion

Overview

1. Please ensure you and your co-Is are registered with the [ALMA Science Portal](#)

2. Create a new proposal by either:

- Selecting *File > New Proposal*
- Clicking on the icon in the toolbar
- Or clicking on this [link](#)

3. Click on the proposal tree node and complete the relevant fields.

New Science Proposal → Create Science Goals → Validate Science Proposal → Submit Science Proposal

Click on the overview steps to view the contextual help

Importing And Exporting | Template Library | Need More Help? | View Phase 2 Steps

Editor window:
Enter your information
here

H0 to five decimal places - Observing Tool for ALMA, version Cycle0

File Edit View Tool Search Help

Perspective 1

Project Structure

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 - Program
 - Unsubmitted Proposal
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 - Proposal
 - Planned Observing
 - Science Goal
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance

Editors

Spectral Spatial Proposal

Proposal Information

Proposal Title: H0 to five decimal places

Proposal Cycle: 2011.0

Abstract (max. 300 words): No, seriously!

Scientific Category:

- Cosmology and the High-redshift Universe
- Galaxies and Galactic Nuclei
- M/Asynchronous/Star Formation/protoplanetary disks/exoplanets
- Stellar Evolution/Neutron Stars and the Solar System

Proposal Type:

- Standard
- Target Of Opportunity

Student Project:

Continuation: (Not Applicable)

Related Proposals:

Feedback

Problems Information Log

0 errors, 0 warnings

Description	Suggestion
✓ No problems found	

Overview

Contextual Help

- Please ensure you and your co-Is are registered with the [ALMA Science Portal](#)
- Create a new proposal by either:
 - Selecting *File > New Proposal*
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Phase I: Science Proposal

```

    graph LR
      A[New Science Proposal] --> B[Create Science Goals]
      B --> C[Validate Science Proposal]
      C --> D[Submit Science Proposal]
  
```

Click on the overview steps to view the contextual help

H0 to five decimal places – Observing Tool for ALMA, version Cycle0

File Edit View Tool Search Help

Perspective 1

Project Structure

- Unsubmitted Proposal
 - H0 to five decimal places
 - Proposal
 - Planned Observing
 - Science Goal
 - General
 - Field Setup
 - Spectral Setup
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 - Control and performance

- Unsubmitted Proposal (read-only)
- Template library. Turn the keys on the JTree below & re...
 - Proposal
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 - B3 spectral sweep CO (9–8): COSMOS SMGs
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 - B6 continuum: GRB ToO: day 17
 - B3 continuum: GRB ToO: day 30
 - B6 12CO (2–1): NGC3256 mosaic
 - B6 13CO (2–1): NGC3256
 - B6 spectral line: Massive Protostellar Cluster
 - B9 spectral line: Massive Protostellar Cluster r...
 - B3 continuum: Protostellar Disks
 - B6 continuum: Protostellar Disks
 - B7 continuum: Protostellar Disks

Editors

Spectral Spatial Proposal

Proposal Information

Proposal Title: H0 to five decimal places

Proposal Cycle: 2011.1

Abstract (max 300 words)

Launch Editor

Scientific Category

- Cosmology and the High Redshift Universe
- Galaxies and Galactic Nuclei
- ISM/Astrochemistry/Star Formation/protoplanetary disks/exoplanets
- Stellar Evolution/the Sun and the Solar System

Proposal Type

- Standard
- Target Of Opportunity

Student Project

Continuation (Not Applicable)

Related Proposals

Feedback



Problems Information Log

0 errors, 0 warnings

Description	Suggestion
✓ No problems found	

Overview

Contextual Help

- Please ensure you and your co-Is are registered with the [ALMA Science Portal](#)
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Phase I: Science Proposal

```

graph LR
    A[New Science Proposal] --> B[Create Science Goals]
    B --> C[Validate Science Proposal]
    C --> D[Submit Science Proposal]
  
```

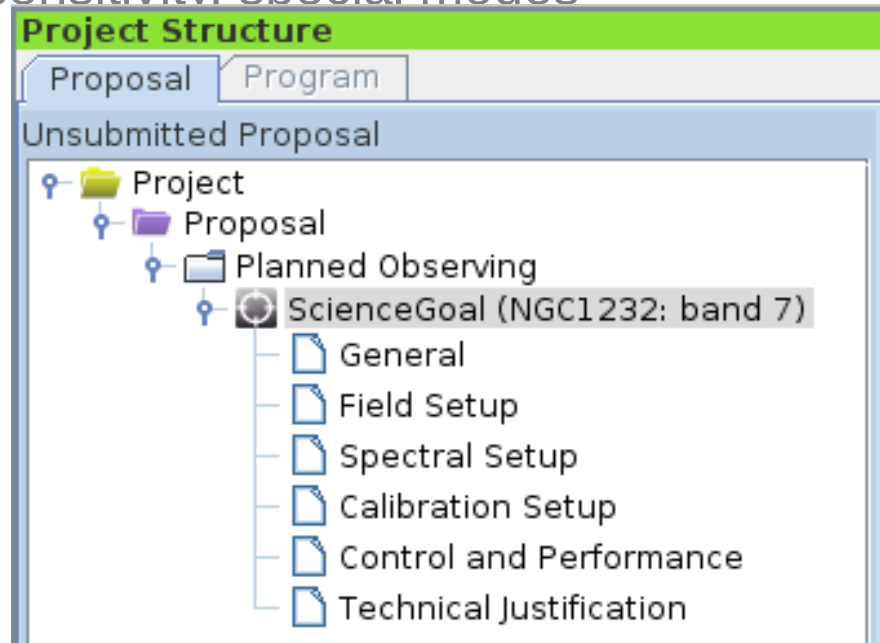
Click on the overview steps to view the contextual help

Importing And Exporting | Template Library | Need More Help? | View Phase 2 Steps

The ALMA-OT

A **Science Goal** consists of:

- 1) (a basic description)
- 2) basic source information: coordinates, velocity, flux density, field
- 3) spectral setup: lines or continuum, frequency, correlator modes
- 4) calibration setup: choose “system-defined”
- 5) control and performance parameters: angular resolution, largest angular structure, required sensitivity, special modes
- 6) technical justification (text)



Science Goal: General

enter a name and description of the science goal (optional)

The screenshot displays a software interface with two main panes. The left pane, titled 'Project Structure', shows a tree view under 'Unsubmitted Proposal' with the following items: 'Project', 'Proposal', 'Planned Observing', and 'ScienceGoal (NGC1232: band 7)'. Under 'ScienceGoal (NGC1232: band 7)', there are sub-items: 'General' (highlighted), 'Field Setup', 'Spectral Setup', 'Calibration Setup', 'Control and Performance', and 'Technical Justification'. The right pane, titled 'Editors', has three tabs: 'Spectral', 'Spatial', and 'General' (selected). The 'General' tab contains a text area with the instruction: 'Enter a name and description for the purpose of this science goal. This text is optional but you may find it useful to keep a note.' Below this is a section titled 'General (Optional)' with a help icon and a minus sign. It contains two main sections: 'Science Goal Name' with the value 'NGC1232: band 7' and a 'Description' section. The description text reads: 'This template focuses on the 12CO(3-2), and HCO+/HCN (4-3) transitions in band 7. In this case, the target is the very inner core of NGC1232, and Total power data are required. An additional baseband is configured to sample continuum, to aid calibration and to constrain dust temperature. This template can be used in conjunction with band 3 or 6 (See also the template for band 10) to more completely sample the CO, HCO+ HCN J-transition ladder, and significantly constrain radiative transfer analysis. While the interval for the sensitivity calculation is 10 km/s, the requested resolution is much lower, to explore any bright, low-velocity width components.'

Science Goal: Spatial Setup

The screenshot shows a software interface with a 'Project Structure' pane on the left and an 'Editors' pane on the right. The 'Project Structure' pane shows a tree view with 'Project' at the top, followed by 'Proposal', 'Planned Observing', and 'ScienceGoal (NGC1232: band 7)'. Under 'ScienceGoal', there are sub-items: 'General', 'Field Setup' (selected), 'Spectral Setup', 'Calibration Setup', 'Control and Performance', and 'Technical Justification'. The 'Editors' pane has tabs for 'Spectral', 'Spatial', and 'Field Setup'. The 'Field Setup' tab is active and contains the following settings:

- Peak Continuum Flux Density per Synthesized Beam: 0.00000 Jy
- Continuum Polarization Percentage: 0.0 per cent
- Peak Line Flux Density per Synthesized Beam: 35.00000 mJy
- Line Width: 15.00000 km/s
- Line Polarization Percentage: 0.0 per cent

Below these settings is a 'Rectangle' section with the following options:

- Coords Type: ABSOLUTE RELATIVE
- System: FK5 J2000
- Field Center Coordinates: Offset(Longitude) 0.00000 arcsec, Offset(Latitude) 0.00000 arcsec
- p length: 1.50000 arcmin
- q length: 1.50000 arcmin
- Position Angle: 0.00000 deg
- Spacing: 0.51093 fraction of antenna beamsize (with a 'Reset to Nyquist' button)
- #Pointings: 12m Array 126, 7m Array 45 (with an 'Export' button)

At the bottom of the interface are buttons for 'Add Source', 'Load from File...', 'Export to File...', 'Delete Source', and 'Delete All Sources'.

basic source information: coordinates, velocity, strength, line width, pointings/map area, ...

Science Goal: Spatial Setup

Source

Source Name: M100

Choose a Solar System Object? Name of object: Unspecified

System: J2000 Sexagesimal display?

Source Coordinates: RA: 12:22:54.8990, Dec: 15:49:20.572

Parallax: 0.00000 mas, PM RA: 0.00000 mas/yr, PM Dec: 0.00000 mas/yr

Source Velocity: 1570.000 km/s, hel, z: 0.005250741, Doppler Type: RELATIVISTIC

Target Type: Multiple Pointings 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Beam: 0.50000 mJy

Peak Line Flux Density per Beam: 3.00000 mJy

Polarisation Percentage: 0.0 %

Line Width: 10.00000 km/s

Rectangle

Coords Type: ABSOLUTE RELATIVE

System: J2000

Field Center Coordinates: Offset(Longitude): 0.00000 arcsec, Offset(Latitude): 0.00000 arcsec

p length: 260.00000 arcsec

q length: 260.00000 arcsec

Position Angle: 0.00000 deg

Spacing: 0.48113 fraction of main beam

#Pointings: 12m Array: 126, 7m Array: 39

Buttons: Add Source, Load from File..., Delete Source, Delete All Sources

Spatial Visual Editor: show ALMA and ACA pointings and beam widths overlaid on FITS images (define rep. freq. first!)

Science Goal: Spectral Setup

Project Structure

- Proposal
- Program
- Unsubmitted Proposal
 - Project
 - Proposal
 - Planned Observing
 - ScienceGoal (NGC1232: band 7)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral | Spatial | Spectral Setup

In the table below, it is possible to define up to 16 spectral windows, 4 per baseband as long as the total Fraction per baseband is 1. Each baseband is 2GHz wide and can be separately configured i.e. each spectral window can have a different bandwidth and resolution. Note that for bands 3, 4, 6, 7 and 8, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Spectral Type

Spectral Type Spectral Line Single Continuum Spectral Scan

Polarization products desired XX DUAL FULL

Spectral Setup Errors

Spectral Line

Baseband-1

Fraction	Centre Freq (rest,lsrk)	Centre Freq (sky,bar)	Transition	Bandwidth, Resolution (smoothed)
1 (Full)	339.09000 GHz	337.18082 GHz	CH3OHv t=0 ...	117.0 MHz (52 km/s), 121.155 kHz (0.107 km/s)

Select Lines to Observe in Baseband-1...

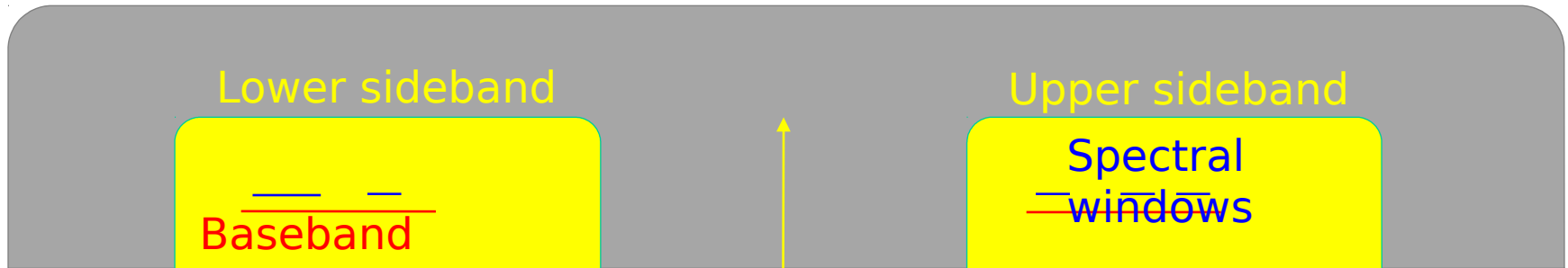
Baseband-2

1/2	339.49953 GHz	337.58804 GHz	CO v=2 3-2	58.594 MHz (52 km/s), 121.155 kHz (0.108 km/s)
1/2	341.41564 GHz	339.49337 GHz	CH3OHv t=0 ...	58.594 MHz (52 km/s), 121.155 kHz (0.107 km/s)

Bandwidth and Spectral resolution after application of Hanning smoothing

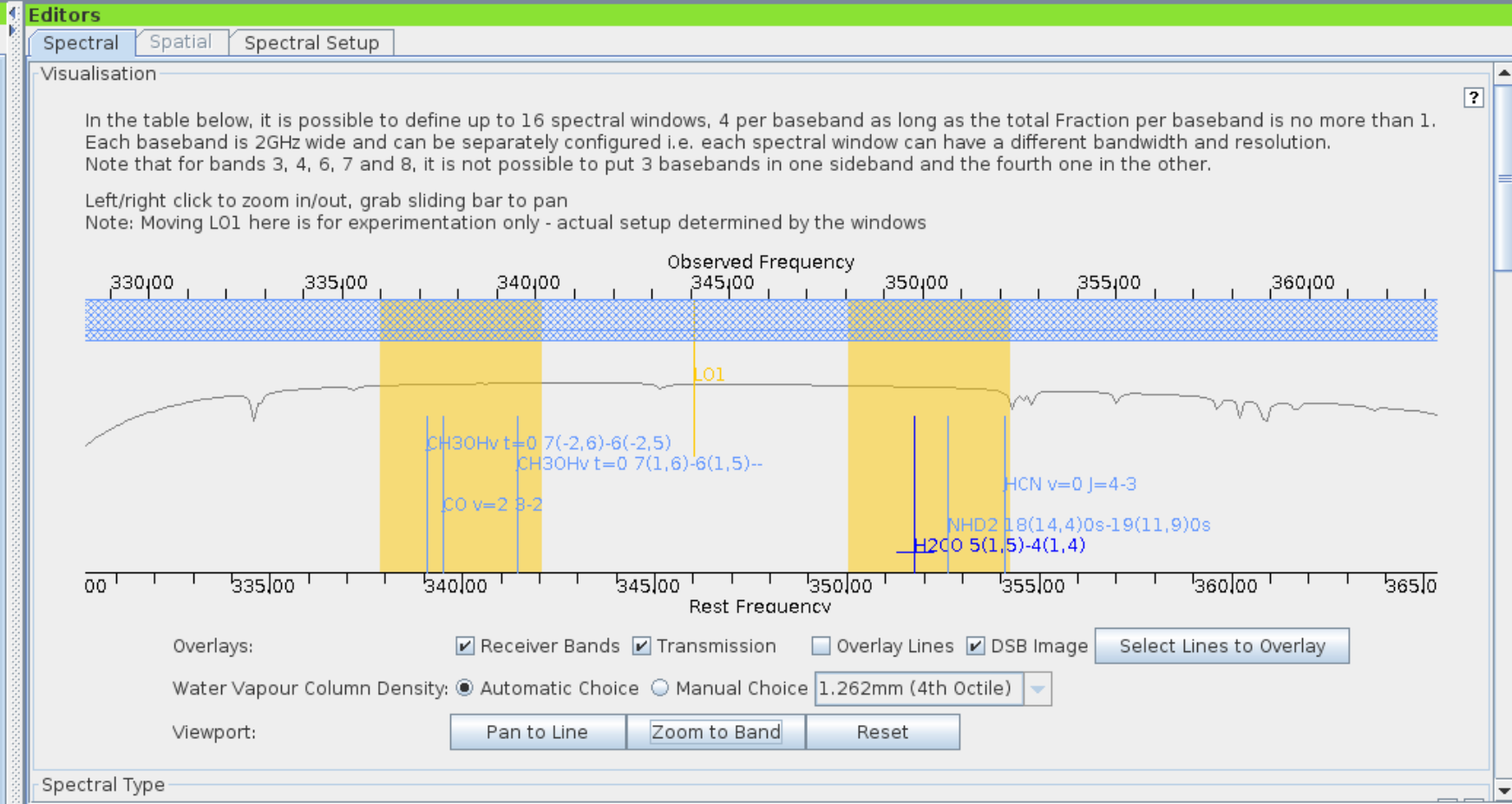
Science Goal: Spectral Setup

ALMA Band



- each ALMA receiver has two **sidebands** (telescope output); widths and separations are band-dependent
- up to 4 **basebands** sample the sideband signals, each 2-GHz wide, two polarizations (X and Y)
- **spectral windows** sample the baseband signals
- possible to define up to 4 spectral windows per baseband
 - different high-resolution and low-resolution correlator modes possible within the same frequency tuning (limiting factor: correlator channels)
- one correlator setup, one set of calibration and control parameters and up to 5 frequency tunings per Science Goal

Science Goal: Spectral Setup



displays sidebands, spectral windows, LO1, atmospheric transmission, spectral lines...

Science Goal: Spectral Setup

Species Filter

H

Include description

ALMA Band: 1 2 3 4 5 6 7 8 9 10

Sky Frequency (GHz): Min 31.3 Max 950

Receiver/Back End Configuration

Hide unobservable lines

Filtering unobservable lines

Maximum Upper-state Energy (K): 0 20 40 60 80 100 ∞

Molecule Filter / Environment

Show: all atoms and molecules

Can't find the transition you're looking for in the offline pool? Find more in the online Splatalogue.

Find More...

Reset Filters

Transitions matching your filter settings

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Lowas Intensity	Sij μ^2	Catalog
HC3Nv7=2 J=25-24, l=0	Cyanoacetylene	228.822 GHz	221.255 GHz	780.68 K	16.8	344.84 D ²	Offline
HC3Nv7=2 J=25-24, l=2f	Cyanoacetylene	228.898 GHz	221.328 GHz	783.32 K	23.1	342.64 D ²	Offline
DNC 3-2	Hydrogen Isocyanide	228.91 GHz	221.34 GHz	21.97 K	0.23	27.91 D ²	Offline
H13CCCN J=26-25	Cyanoacetylene	229.203 GHz	221.623 GHz	148.51 K	20.7	362.07 D ²	Offline
H(30) α	Hydrogen Recombination Line	231.901 GHz	224.232 GHz				Offline
He(30) α	Helium Recombination Line	231.995 GHz	224.323 GHz				Offline
HCCCHO 22(2,21)-22(1,22)	2-Propynal	232.328 GHz	224.645 GHz	125.28 K	2.8	20.71 D ²	Offline

Spectral line picker:

- database: NRAO's Splatalogue (small internal version or online interface to 5.8 million lines)
- filtering options: species, max. upper state, within tuning constraints, ... (wildcards ok)

Add to Selected Transitions

Selected transitions

Transition	Description	Rest Frequency	Sky Frequency
CO v=0 2-1	Carbon Monoxide	230.538 GHz	222.914 GHz

Remove from Selected Transitions

Cancel Ok

Science Goal: Spectral Setup

Editors

Spectral | Spatial | Spectral Setup

Spectral Line

Baseband-1

Fractor	Centre Freq (rest,lsrk)	Centre Freq (sky,bar)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)	339.09000 GHz	337.18082 GHz	CH3OHv t=0 ...	117.188 MHz(104 km/s), 121.155 kHz(0.108 km/s)	4	<input type="radio"/>

Select Lines to Observe in Baseband-1... Add Delete

Baseband-2

1/2	339.49953 GHz	337.58804 GHz	CO v=2 3-2	58.594 MHz(52 km/s), 121.155 kHz(0.108 km/s)	4	<input checked="" type="radio"/>
1/2	341.41564 GHz	339.49337 GHz	CH3OHv t=0 ...	58.594 MHz(52 km/s), 121.155 kHz(0.107 km/s)	4	<input type="radio"/>

Select Lines to Observe in Baseband-2... Add Delete

Baseband-3

1/2	352.64125 GHz	350.65577 GHz	NHD2 18(14,...	58.594 MHz(50 km/s), 121.155 kHz(0.104 km/s)	4	<input type="radio"/>
1/2	354.09000 GHz	352.09637 GHz	HCN v=0 J=4-3	58.594 MHz(50 km/s), 121.155 kHz(0.103 km/s)	4	<input type="radio"/>

Select Lines to Observe in Baseband-3... Add Delete

Baseband-4

1(Full)	351.76865 GHz	349.78809 GHz	H2CO 5(1,5)-...	937.500 MHz(804 km/s), 488.281 kHz(0.418 km/s)	1	<input type="radio"/>
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Science Goal: Calibration Setup

The screenshot displays a software interface for setting up calibration for a science goal. On the left, the 'Project Structure' pane shows a tree view under 'Unsubmitted Proposal' with 'Project' expanded to 'Planned Observing', then 'ScienceGoal (NGC1232: band 7)', and finally 'Calibration Setup' selected. The main 'Editors' window has tabs for 'Spectral', 'Spatial', and 'Calibration Setup'. The 'Calibration Setup' tab contains the following text: 'Select calibration setup. If "system" is selected, the ALMA system will select default calibrators.' Below this is a section titled 'Goal Calibrators' with the instruction: 'Select *User-defined calibration* to choose your own calibrators, or *System-defined calibration* to let the system automatically select the calibrators to be observed. We **STRONGLY** suggest that you leave this choice at 'System-defined' - the Observatory will ensure that suitable calibrators are selected.' Two radio buttons are present: 'System-defined calibration' (which is selected) and 'User-defined calibration'.

- in almost all cases, “system-defined calibration” is fine
- if “user-defined calibration” is requested, one needs to justify that in the scientific justification

Science Goal: Control/Performance

Editors

Spectral Spatial Control and Performance

These parameters are used to control various aspects of the observations, including the required antenna configurations and integration times.

Control and Performance

Configuration Information

Antenna Beamsize ($1.13 * \lambda / D$)	12m	<input type="text" value="17.248 arcsec"/>	7m	<input type="text" value="29.568 arcsec"/>	
Number of Antennas	12m	<input type="text" value="40"/>	7m	<input type="text" value="10"/>	TP <input type="text" value="3"/>
		ACA 7m configuration	Most compact 12m configuration	Most extended 12m configuration	
Longest baseline		<input type="text" value="0.049 km"/>	<input type="text" value="0.157 km"/>	<input type="text" value="6.855 km"/>	
Synthesized beamsize		<input type="text" value="3.723 arcsec"/>	<input type="text" value="1.094 arcsec"/>	<input type="text" value="0.035 arcsec"/>	
Shortest baseline		<input type="text" value="0.009 km"/>	<input type="text" value="0.015 km"/>	<input type="text" value="0.168 km"/>	
Maximum recoverable scale		<input type="text" value="19.771 arcsec"/>	<input type="text" value="8.605 arcsec"/>	<input type="text" value="0.388 arcsec"/>	

Desired Performance

Desired Angular Resolution (Synthesized Beam)

In order to request stand-alone ACA, enter an angular resolution that is similar to the synthesized beamsize displayed above for that array.

Largest Angular Structure in source

Desired mosaic sensitivity equivalent to

Bandwidth used for Sensitivity Frequency Width

Science goal integration time estimate

Override OT's sensitivity-based time estimate (must be justified) Yes No

Are the observations time-constrained? Yes No

Science Goal: Technical Justification

enter brief explanations for the chosen parameters:

Sensitivity, Imaging, Correlator configuration, other choices to be justified

The screenshot shows a software interface with two main panels. The left panel, titled 'Project Structure', shows a tree view of a project under 'Unsubmitted Proposal'. The tree includes 'Project', 'Proposal', 'Planned Observing', and 'ScienceGoal (NGC1232: band 7)'. Under 'ScienceGoal', there are sub-items: 'General', 'Field Setup', 'Spectral Setup', 'Calibration Setup', 'Control and Performance', and 'Technical Justification'. The right panel, titled 'Editors', has tabs for 'Spectral', 'Spatial', and 'Technical Justification'. The 'Technical Justification' tab is active and contains the following text:

Enter a Technical Justification for this Science Goal, paying special attention to the parameters reproduced below.

Sensitivity

Requested RMS over 1.289 GHz is 10.00 mJy For a peak flux density of 35.00 mJy, the S/N is 3.5

Achieved RMS over the total 1.289 GHz bandwidth is 795.53 uJy For a continuum flux density of 0.00 Jy, the achieved S/N is 0.0

For a peak line flux of 35.00 mJy, the achieved S/N over 1/3 of the source line width (15.00 km/s / 3 = 5.00 km/s) is 2.9

Note that one or more of the S/N estimates are < 3. Please double-check the RMS and/or line fluxes entered and/or address the issue below.

Line width / bandwidth used for sensitivity (15.00 km/s / 1144.74 km/s) = 0.01

Note that the bandwidth used for sensitivity is larger than 1/3 of the linewidth.
The S/N achieved for a resolution element that allows the line to be resolved will be lower than that reported.

Justify your requested RMS and resulting S/N for the spectral line and/or continuum observations.

For line observations also justify the bandwidth used for the sensitivity calculation.

This text is merely a placeholder.

This particular SG is part of the Band 7 bright molecular lines template and is not intended to be necessarily copied verbatim. The PI should be sure they update/modify the source parameters in the Field setup tab, and complete the Technical justification text to address and justify their selections.

Imaging

Requested angular resolution : 1.00 arcsec


Requested largest angular scale : 1.00 arcmin

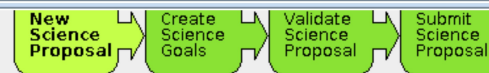
Tools: Validation

A proposal must be validated before submission!

- OT checks that all necessary information is present
- errors appear in Feedback panel
- a project cannot be submitted with validation errors

Description	Suggestion
✘ No Principal Investigator specified	Select the top level Project node in the tree and fill in the Principal Investigator field
✘ No Project Name specified	Select the top level Project node in the tree and fill in the Project Name field
✘ Abstract appears to be empty	Select the proposal node in the Proposal tab and edit your abstract
✘ No scientific category defined	Select Proposal node and set a scientific category
✘ No proposal type defined	Select Proposal node and set a proposal type
✘ No document found - you must add a Science Case to your proposal	Select the proposal node in the Proposal tab and add your document
✘ Must select a minimum of 1 science keywords	Select the Proposal node and then add some science keywords (minimum 1 keywords)

1. Please ensure you and your COs are registered with the [ALMA Science Portal](#)
2. Create a new proposal by either:
 - Selecting **File > New Proposal**
 - Clicking on the  icon in the toolbar



Click on the overview steps to view the contextual help

Tools: Sensitivity Calculator

File Edit View Tool Search Help

Project Structure

Unsubmitted Proposal

Project

Proposal

Planned Observing

ScienceGoal (Copy of Bright molecular ge)

General

Field Setup

Spectral Setup

Calibration Setup

Control and Performance

Technical Justification

NGC1232

Source

Cycle 4 template library (read-only)

e 4 template library

Proposal

Planned Observing

ScienceGoal (B7 Continuum: Pluto/Charon)

ScienceGoal (Multi-source mosaics. Band 6: N66 (S

ScienceGoal (GRB Target of opportunity: Band 4)

ScienceGoal (Full Polarization: 3C286: Band 6)

ScienceGoal (Disk: TW Hya: Band 7)

ScienceGoal (Single-point spectral sweep of Sgr B2

Feedback

Common Parameters

Dec 00:00:00.000

Polarization Dual

Observing Frequency 345.00000 GHz

Bandwidth per Polarization 7.50000 GHz

Water Vapour Automatic Choice Manual Choice

Column Density 0.913mm (3rd Octile)

tau/Tsky tau0=0.158, Tsky=39.538

Tsys 157.027 K

Individual Parameters

	12m Array		7m Array		Total Power Array	
Number of Antennas	40		10		3	
Resolution	1.00000	arcsec	5.97455	arcsec	17.9	arcsec
Sensitivity (rms)	0.00000	ujy	0.00000	ujy	0.00000	ujy
(equivalent to)	0.00000	K	0.00000	K	0.00000	K
Integration Time	60.00000	s	60.00000	s	60.00000	s

Integration Time Unit Option Automatic

Sensitivity Unit Option Automatic

Calculate Integration Time Calculate Sensitivity Close

● A valid sensitivity must be entered in order to calculate an integration time.

- calculates sensitivity (or time) for all three arrays (for experimentation!)
- weather is described in terms of PWV octiles
 - PWV can be set manually, but ALMA always chooses for you!
- version in OT is independent from SG inputs

● Selecting File > New Proposal
 ● Clicking on the icon in the toolbar

Click on the overview steps to view the contextual help

The ALMA-OT

Other tools and help:

- **Sensitivity Calculator** also available via Science Portal
- **ALMA simulator** (in CASA or online tool)
- lots of **documents**, manuals, guides, **video tutorials** available on the ALMA Science Portal, updated before each deadline
- **German ALMA Community Day** ~2-4 weeks before the deadline, this year: 05 April 2018