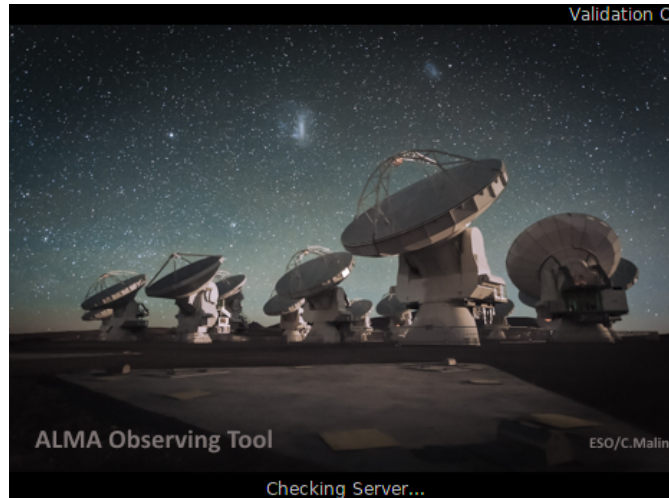


The ALMA Observing Tool (OT)

(or the essential tool to prepare and submit a proposal for ALMA)



Ana Karla Díaz-Rodríguez



EUROPEAN ARC
ALMA Regional Centre || UK

(remainder for me: pdf for scientific justification)

MANCHESTER
1824

ALMA timeline

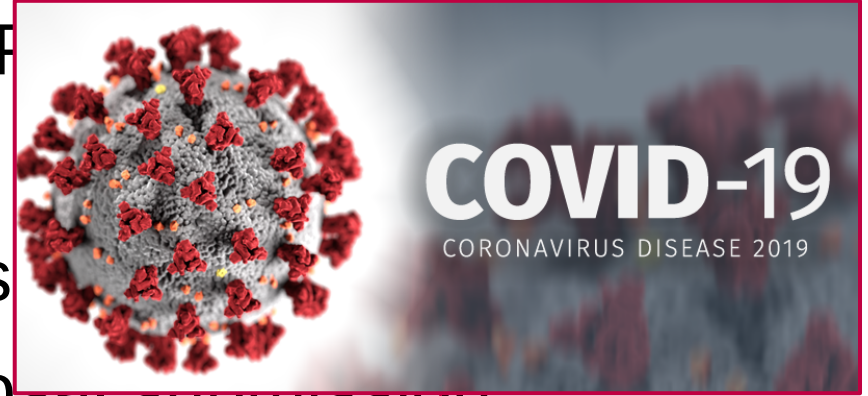
- March: Call for proposals (CfP)
- April: Proposals due
- August: Grades for proposals are announced
- September: Phase 2 of proposal submission (review of the Scheduling Blocks); end of observations from the previous cycle; ACA supplemental CfP
- October: Observations start for new cycle; ACA proposals due

ALMA timeline

- March: Call for proposals (CfP)
 - April: Proposals due
- } OT (Phase 1)
- August: Grades for proposals are announced
 - September: Phase 2 of proposal submission (review of the Scheduling Blocks); end of observations from the previous cycle; ACA supplemental CfP
 - October: Observations start for new cycle; ACA proposals due
- OT (if proposal accepted) ←

ALMA timeline

- March: Call for proposals (CfP)
- April: Proposals due
- August: Grades for proposals
- September: Phase 2 of proposal submission (review of the Scheduling Blocks); end of observations from the previous cycle; ACA supplemental CfP
- October: Observations start for new cycle; ACA proposals due



Shifted 1 year

Cycle 8 2021 ALMA timeline

- March 17: Call for proposals (CfP)
- April 21: Proposals due
- August: Grades for proposals are announced
- September 8: ACA supplemental CfP
- October 1: Observations start for Cycle 8 and continue with remainder of Cycle 7
- October 6: ACA proposals due

Observing Tool (OT)

- Java desktop application (c8: own version of Java 11)
- Updated each cycle to match ALMA capabilities
- Works on Linux, Mac, Windows

Download and installing: ALMA OT **Installer** (recommended) or **tarball** (if anything goes wrong with the installer :()

Documentation: **OT Quickstart Guide**, **OT video tutorials**, **User Manual**

Lets propose!

ALMA proposal

Science justification + Technical Justification

Why?

4 or 6 pages

PDF file

([templates](#))

How?

OT

Lets propose!

ALMA proposal

Science justification + Technical Justification

Why?

How?

Science Goals contain the technical specification of your project. Are limited to one correlator setup, one calibration strategy, and one set of Control and Performance parameters.

- Band 3 observations of one or more targets **(1 SG)**
- Band 3 observations at 0.02" and 4" **(2 SG)**
- Band 3, Band 4 and Band 5 observations **(3 SG)**

Now, lets propose!

Example 1: Continuum observations of several targets (e.g. survey of protostars)

Example 2: Line observations of single target (e.g. study kinematics of a protostellar disk)

Example 3: Mosaic observations (e.g. mapping a star-forming filament)

Now, lets propose!

Example 1: Continuum observations of several targets (e.g. survey of protostars)

Example 2: Line observations of single target (e.g. study kinematics of a protostellar disk)

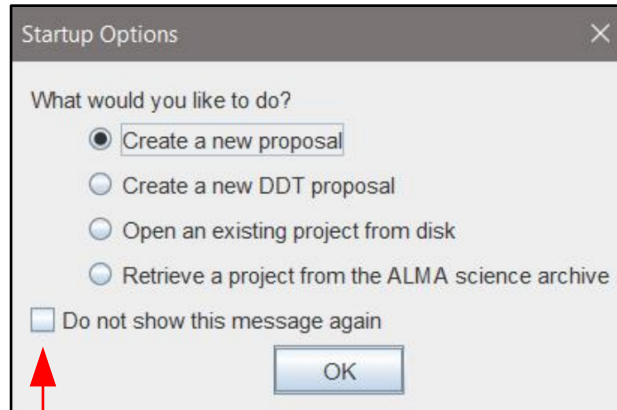
Example 3: Mosaic observations (e.g. mapping a star-forming filament)

0. Register with the ALMA Science Portal (PI and co-Is)

Open the OT

Linux (terminal): `./ALMA-OT.sh`

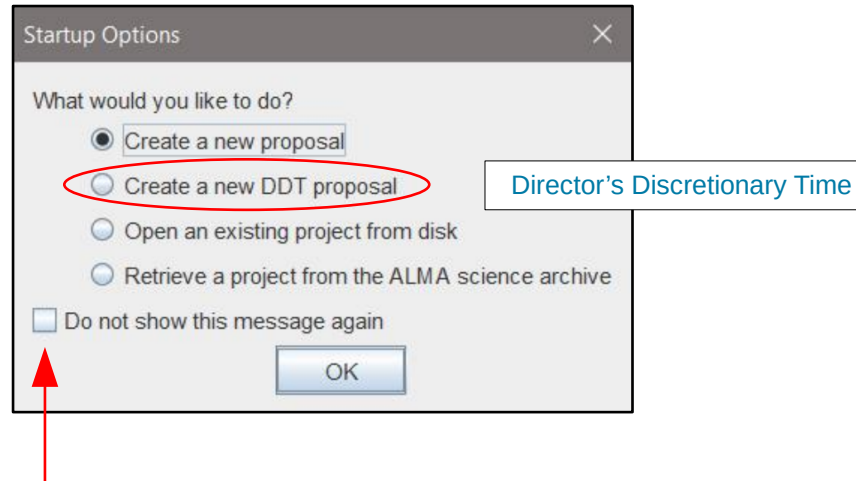
Mac (double-click): ALMA-OT.app



Open the OT

Linux (terminal): `./ALMA-OT.sh`

Mac (double-click): ALMA-OT.app



Open the OT

ALMA Observing Tool (Validation OT) - Project

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal | Program

Unsubmitted Proposal

- Project
 - Proposal
 - Planned Observing

Editors

Spectral | Spatial | Project

Principal Investigator

[Select PI...](#)

Main Project Information

Project

Assigned Priority

Project Code None Assigned

Feedback

Validation | Validation History | Log

Description	Suggestion
-------------	------------

Overview

Contextual Help

- Create your science goals by either:
 - Selecting **Edit > New Phase 1 Science Goal**
 - Clicking on the icon in the toolbar
 - Or clicking on this [link](#)
- Complete the field set-up and spectral set-up, etc.
More than one science goal may be added.

Phase 1: 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

Open the OT

ALMA Observing Tool (Validation OT) - Project

File Edit View Tool Search Help

Project Structure

Unsubmitted projects

Project

Planned Observing

New DDT

Editors

Principal Investigator

Select PI...

Main Project Information

Project

Assigned Priority

Project Code None Assigned

Feedback


Validation Validation History Log

Description

Suggestion

Overview

Contextual Help

1. Create your science goals by either:
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 - Clicking on the  icon in the toolbar
 - Or clicking on this [link](#)
2. Complete the field set-up and spectral set-up, etc. More than one science goal may be added.

Phase 1: 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

Open the OT

ALMA Observing Tool (Validation OT) - Project

File Edit View Tool Search Help

Project Structure

Proposal

Unsubmitted projects

Project

Proposal

New DDT

Editors

Spectral Spatial Project

Principal Investigator

Select PI...

Main Project Information

Project

Assigned Priority

Project Code None Assigned

Feedback

Validation Validation History Log

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

Click on the overview steps to view the contextual help

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

Open the OT

To navigate the project
To add SGs

Project Structure

Proposal | Program

Unsubmitted Proposal

- Project
- Planned Observing

Editors

Spectral | Spatial | Project

Principal Investigator

Select PI...

Main Project Information

Project

Assigned Priority

Project Code None Assigned


Feedback

Validation | Validation History | Log

Description	Suggestion
-------------	------------

Overview

Contextual Help

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

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

Open the OT

ALMA Observing Tool (Validation OT) - Project

File Edit View Tool Search Help

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

Project

Planned Observing

Editors

Spectral Spatial Project

Principal Investigator

Select PI...

Main Project Information

Project

Assigned Priority

Project Code None Assigned

To edit the project
Changes depending where you are
in the Project Structure panel


Feedback

Validation Validation History Log

Description Suggestion

Overview

Contextual Help

1. Create your science goals by either:
 - Selecting **Edit > New Phase 1 Science Goal**
 - Clicking on the  icon in the toolbar
 - Or clicking on this [link](#)
2. Complete the field set-up and spectral set-up, etc.
More than one science goal may be added.

Phase 1: 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

Open the OT

ALMA Observing Tool (Validation OT) - Project

File Edit View Tool Search Help

Project Structure

Proposal Program

Unsubmitted Proposal

Project

Planned Observing

Editors

Spectral Spatial Project

Principal Investigator

Select PI...

Main Project Information

Project

Assigned Priority

Project Code None Assigned

Feedback


Validation Validation History Log

Description Suggestion

To validate the project at any point
before submission
Give you info on errors or warnings

Overview

Contextual Help

1. Create your science goals by either:
 - Selecting *Edit* > *New Phase 1 Science Goal*
 - Clicking on the  icon in the toolbar
 - Or clicking on this [link](#)
2. Complete the field set-up and spectral set-up, etc.
More than one science goal may be added.

Phase 1: 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

Open the OT

ALMA Observing Tool (Validation OT) - Project

File Edit View Tool Search Help

Project Structure

Proposal Program

Unsubmitted Proposal

Project

Planned Observing

Editors

Spectral Spatial Project

Principal Investigator

Select PI...

Main Project Information

Project

Assigned Priority

Project Code None Assigned

Feedback

Validation Validation History Log


Description

Suggestion

Overview

Help on proposal preparation and OT

Contextual Help

1. Create your science goals by either:
 - Selecting **Edit > New Phase-I Science Goal**
 - Clicking on the  icon in the toolbar
 - Or clicking on this [link](#)
2. Complete the field set-up and spectral set-up, etc.
More than one science goal may be added.

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

For each proposal you must...

ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Project

Project Structure

Unsubmitted Proposal

Project

Proposal

Editors

Principal Investigator

Select PI...

Main Project Information

Project

Assigned Priority

Project Code

None Assigned

Investigator search constraints

Name contains Karla

Find Investigators

Full name	Email	Affiliation	ALMA ID
Ana Karla Díaz Rodríguez	ana.diazrodriguez@manchester.ac.uk	Jodrell Bank Centre for Astrophysics, Manchester...	anika
	gastro.puc.cl	Institute of Astrophysics, Católica de Chile, Pontifi...	ikarla

Select PI

Cancel

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 [New Proposal](#) icon in the toolbar
 - Or clicking on this [link](#)
- Click on the [proposal](#) tree node and complete the relevant fields.

Phase 1: 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

For each proposal you must...

ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Project

File Edit View Tool Search Help

Project Structure

Proposal | Program

Unsubmitted Proposal

Project

Proposal

Editors

Spectral | Spatial | Proposal

Proposal Information

Proposal Title

Proposal Cycle: 2021.1

Abstract (max. 1200 characters)

Proposal Type

☐ Regular ☐ Large Program ☐ Target Of Opportunity ☐ VLBI ☐ Phased Array

Scientific Category

☐ Cosmology and the High Redshift Universe ☐ Galaxies and Galactic Nuclei ☐ ISM, star formation and astrochemistry

☐ Circumstellar disks, exoplanets and the solar system ☐ Stellar Evolution and the Sun

Please select one or two keywords

Student project ☐

Investigators

Type	Full name	Email	Affiliation	ALMA ID	Executive	Reviewer
PI	Ana Karla Diaz Rodriguez	ana.diazrodriguez@manches...	Jodrell Bank Centre for Astrop...	anika	Europe	<input type="checkbox"/>

Feedback

Validation | Validation History | Log

Description	Suggestion
-------------	------------

Contextual Help

- Please ensure you and your co-Is are registered with the [ALMA Science Portal](#)
- Create a new proposal by either:
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- 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

Click on the overview steps to view the contextual help

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

For each proposal you must...

ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Example 1

File Edit View Tool Search Help

Project Structure

Proposal Program

Unsubmitted Proposal

Example 1

Proposal

Proposal Information

Proposal Title: Example 1

Proposal Cycle: 2021.1

Abstract (max. 1200 characters): bla bla

Proposal Type:

- ☒ Regular
- ☐ Large Program
- ☐ Target Of Opportunity
- ☐ VLBI
- ☐ Phased Array

Scientific Category:

- ☐ Cosmology and the High Redshift Universe
- ☐ Galaxies and Galactic Nuclei
- ☒ ISM, star formation and astrochemistry
- ☐ Circumstellar disks, exoplanets and the solar system
- ☐ Stellar Evolution and the Sun

Please select one or two keywords:

- Outflows, jets and ionized winds
- High-mass star formation
- Intermediate-mass star formation
- Low-mass star formation
- Sub-stellar cores, Infra-Red Dark Clouds (IRDC)

Student project: ☒

Investigators:

This option should be checked if the proposed project is intended to obtain data for a student thesis

PI	Type	Full name	Email	Affiliation	ALMA ID	Executive	Reviewer
Ana	Karla	Díaz Rodríguez	ana.diazrodriguez@manches...	Jodrell Bank Centre for Astrop...	anika	Europe	<input checked="" type="checkbox"/>

Feedback

Validation Validation History Log

Description

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
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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

New!

Except large programs

For each proposal you must...

ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Example 1

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
 - Example 1
 - Proposal
 - Planned Observing

Editors

Spectral Spatial Proposal

Keywords

Please select one or two keywords

- Outflows, jets and ionized winds
- High-mass star formation
- Intermediate-mass star formation
- Low-mass star formation
- Pre-stellar cores, Infra-Red Dark Clouds (IRDC)

Student project ☒

Investigators

Type	Full name	Email	Affiliation	ALMA ID	Executive	Reviewer
PI	Ana Karla Diaz Rodriguez	ana.diazrodriguez@manches...	Jodrell Bank Centre for Astrop...	anika	Europe	<input checked="" type="checkbox"/>
Col	George Bendo	george.bendo@manchester....	Jodrell Bank Centre for Astrop...	gbendo	Europe	<input type="checkbox"/>

Investigator search constraints

Name contains avison

Find Investigators

Full name	Email	Affiliation	ALMA ID
Adam Avison	adam.avison@manchester.ac.uk	Jodrell Bank Centre for Astrophysics, Manchester,...	aaavison

Add Col Cancel

Scroll down!

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 tree node and complete the relevant fields.

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

For each proposal you must...

Scroll down!

Investigator search constraints

Name contains Anglada

Find Investigators

Full name	Email	Affiliation	ALMA ID
Guilem Anglada	guilem@iaa.es	School of Physics and Astronomy, Queen Mary, U... Astrophysical Institute of Andalusia	guilem

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**

For each proposal you must...

Project Structure

- Unsubmitted Proposal
 - Example 1
 - Proposal
 - Planned Observing

Editors

Spectral | Spatial | Proposal

Select PI Add CoPI Add CoI Remove Collaborator Add from Proposal

Reviewer Information

Please designate a reviewer who will participate in the distributed review process. The reviewer may be the PI of the proposal or one of the co-Is. A student (without a PhD) may serve as the reviewer only if s/he is the PI of the proposal and a mentor (with a PhD) is identified. The mentor does not need to be a co-I on the proposal.

Reviewers are requested to update their user profiles with combinations of scientific categories and keywords which describe their area(s) of expertise using the new 'Expertise' tab in <https://asa.alma.civUserRegistration/secureupdateaccount.jsp>. Available expertise information will be used in the distribution of proposal assignments.

Reviewer has a PhD? ☐ No ☒ Yes

Science Case

Please ensure that your science case is properly anonymized following instructions on the Science Portal

Science Case (Mandatory, PDF, 4 pages max.) **Attach...** Detach View...

Duplicate observations

Briefly justify any new observations that duplicate archival data or accepted programs. Information regarding the ALMA Duplication Policy and how to search archival data and accepted programs can be found at: <http://almascience.org/proposing/duplications>

Observatory Use Only

Feedback

Validation Validation History Log

Description	Suggestion
-------------	------------

Contextual Help

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 - Clicking on the icon in the toolbar
 - 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

For each proposal you must...

ALMA Observing Tool (Validation OT) - Example 1

File Edit View Tool Search Help

Project Structure

Proposal | Program

Unsubmitted Proposal

Example 1

Proposal

Planned Observing

Editors

Spectral | Spatial | Proposal

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Reviewer has a PhD? ☐ No ☒ Yes

Science Case

Please ensure that your science case is properly anonymized following instructions on the Science Portal

Science Case (Mandatory, PDF, 4 pages max.) [ScientificJustification.pdf](#) Attach... Detach View...

Duplicate observations

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Observatory Use Only

Feedback

Validation | Validation History | Log

Description	Suggestion
-------------	------------

Overview

Contextual Help

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 - Clicking on the icon in the toolbar
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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

For each proposal you must...

ALMA Observing Tool (Validation OT) - Example 1

File Edit View Tool Search Help

Project Structure

Proposal [Program]

Unsubmitted Proposal

Example 1

Proposal

Planned Observing

Editors

Spectral Spatial Proposal

Select PI Add CoPI Add CoI Remove Collaborator Add from Proposal

Reviewer Information

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Reviewer has a PhD? ☐ No ☒ Yes

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Observatory Use Only

Feedback

Contextual Help

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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

Check Point!
Save your project now (aot file)
(we are going to use it as template later)

Scroll down!

Now, lets propose!

Example 1: Continuum observations of several targets
(e.g. survey of protostars)

- 1 Science Goal with multiple targets

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

File Edit View Tool Search Help

Project Structure

Proposal Program

Unsubmitted Proposal

Example 1

Planned Observations

Context Menu:

- Cut (Ctrl-X)
- Copy (Ctrl-C)
- Paste (Ctrl-V)
- New Science Goal
- Clone node
- Show Printable Summary
- Generate a PDF of Whole Proposal
- Display Project Time Summary
- Expand all (Ctrl-Z)
- Collapse all
- Find previous (Alt-Up)
- Find next (Alt-Down)
- Delete

Editors

Spectral Spatial Planned Observing

Table of the science goals. Double click on table to select science goal in project tree.

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

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

Right-click!

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

Project Structure

Unsubmitted Proposal

Example 1

Planned Observations

Right-click!

Editors

Spectral Spatial Planned Observing

Table of the science goals. Double click on table to select science goal in project tree.

Feedback

Validation Validation History Log

Description Suggestion

Contextual Help

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.

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

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

File Edit View Tool Search Help

Project Structure

Unsubmitted Proposal

Example 1

Planned Observing

ScienceGoal (Science Goal)

- General
- Field Setup
- Spectral Setup
- Calibration Setup
- Control and Performance
- Technical Justification

Editors

Spectral Spatial Planned Observing

Table of the science goals. Double click on table to select science goal in project tree.

Science Goal	No. Sources	Band	Spec. Type	No. Spec. Win.	Pol.	Calibration Setup	Ang. Res.	Largest Scale	Rep. Freq.	Sens.
--------------	-------------	------	------------	----------------	------	-------------------	-----------	---------------	------------	-------

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

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

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

Project Structure

- Proposal
 - Unsubmitted Proposal
 - Example 1
 - Planned Observing
 - ScienceGoal (Science Goal)**
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral | Spatial | **ScienceGoal (Science Goal)** | General (Optional)

Science Goal Name: Science Goal

Description

SinglePoint

Source

Source Name: [] [Resolve]

Choose a Solar System Object? [] Name of object: Unspecified

Source Coordinates

System: ICRS Sexagesimal display? [x] Parallax: 0.00000 mas

RA: 00:00:00.0000 PM RA: 0.00000 mas/yr

Dec: 00:00:00.0000 PM DEC: 0.00000 mas/yr

Source Radial Velocity: 0.000 km/s lsrk z: 0.00000000 Doppler Type: RADIO

Target Type: ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam: 0.00000 Jy

Continuum Linear Polarization: 0.0 per cent

Continuum Circular Polarization: 0.0 per cent

Feedback

Validation | Validation History | Log

Description	Suggestion
-------------	------------

Overview

Contextual Help

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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

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

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Project Structure

Unsubmitted Proposal

Example 1

Proposal

Planned Observing

ScienceGoal (Science Goal)

General

Field Setup

Spectral Setup

Calibration Setup

Control and Performance

Technical Justification

Editors

Spectral Spatial General

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.

General (Optional)

Science Goal Name Science Goal

Description

Only info relevant to the tab

Feedback

Validation Validation History Log

Description Suggestion

Overview

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Phase I: Science Proposal

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Spectral Spatial General

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.

General (Optional)

Science Goal Name Target 1

Description

Feedback

Validation Validation History Log

Overview

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Validate Science Proposal

Submit Science Proposal

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Editors

Spectral Spatial Field Setup

Spatial Image

SinglePoint

Source

Source Name

Choose a Solar System Object?

System

Source Coordinates

RA

Dec

Source Radial Velocity

Target Type

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam

Continuum Linear Polarization

Continuum Circular Polarization

Peak Line Flux Density per Synthesized Beam

Line Width

Line Linear Polarization

Line Circular Polarization

Field Center Coordinates

Coord Type

Offset Unit

#Pointings

RA [arcsec]

Dec [arcsec]

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

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Validation Validation History Log

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Contextual Help

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Spectral Spatial Field Setup

Spatial Image

HOPS 108

Source Name: HOPS 108

Choose a Solar System Object? ☐

Name of object: Unspecified

Resolve

Name Resolver Results

simbad.u-strasbg.fr (SIMBAD) found 1 match for the object 'HOPS 108'.

Warning! Your selected result is missing proper motion and/or velocity.

Name / Alias	Position	Proper Motion	Velocity		
	RA	Dec	RA	Dec	
[MGM2012] 2289	05:35:27.0696	-05:10:00.408			

Resolve source in SIMBAD

Cancel Select

Contextual Help

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Editors

Spectral Spatial Field Setup

Spatial Image

Image Filename

FOV Parameters

Representative Frequency (Sky) 0.000 GHz

Antenna Diameter 12m

Antenna Beamsize (HPBW) 0.000 arcsec

Show Antenna Beamsize ☒

Image Query

Image Server Digitized Sky (Version II) at ESO

Image Size(arcmin) 10.0

Query

HOPS 108

Source

Source Name HOPS 108

Choose a Solar System Object? ☐ Name of object Unspecified

Resolve

System ICRS Sexagesimal display? ☒

Parallax 0.00000 mas

Source Coordinates

RA 05:35:27.0696

Dec -05:10:00.498

Resolved by simbad.u-strasbg.fr (SIMBAD)

PM RA 0.00000 mas/yr

PM DEC 0.00000 mas/yr

Source Radial Velocity 0.000 km/s

z 0.000000000

Doppler Type RADIO

Target Type ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam 0.00000 Jy

Continuum Linear Polarization 0.0 per cent

Continuum Circular Polarization 0.0 per cent

Peak Line Flux Density per Synthesized Beam 0.00000 Jy

Line Width 0.00000 km/s

Line Linear Polarization 0.0 per cent

Line Circular Polarization 0.0 per cent

Field Center Coordinates

Coord Type ☒ Relative ☐ Absolute

Offset Unit arcsec

#Pointings 1

RA [arcsec] 0.00000

Dec [arcsec] 0.00000

Add Delete Reset Import Export

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources


Always double-check and fill in if necessary

Feedback

Validation Validation History Log

Overview

Contextual Help

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Phase I: Science Proposal

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

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ALMA Observing Tool (Validation OT) - Example 1

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Spectral Spatial Field Setup

Spatial Image

FOV Parameters

Image Query

Field Center Coordinates

HOPS 108

Source

Source Name: HOPS 108

Choose a Solar System Object? ☐ Name of object: Unspecified

System: ICRS Sexagesimal display? ☒

Source Coordinates: RA: 05:35:27.0696 Dec: -05:10:06.498

Source Radial Velocity: 0.000 km/s

Target Type: ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam: 0.0 Jy

Continuum Linear Polarization: 0.0 per cent

Continuum Circular Polarization: 0.0 per cent

Peak Line Flux Density per Synthesized Beam: 0.00000 Jy

Line Width: 0.00000 km/s

Line Linear Polarization: 0.0 per cent

Line Circular Polarization: 0.0 per cent

Field Center Coordinates

Coord Type: ☒ Relative ☐ Absolute

Offset Unit: arcsec

#Pointings: 1

RA [arcsec]: 0.00000 Dec [arcsec]: 0.00000

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

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- Create a new proposal by either:
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Phase I: Science Proposal

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

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

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Phase I: Science Proposal

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

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

Always double-check and fill in if necessary

Source

Source Name HOPS 108

Choose a Solar System Object? ☐ Name of object Unspecified

System ICRS Sexagesimal display? ☒

Source Coordinates

RA 05:35:27.0696 PM RA 0.00000 mas/yr

Dec -05:10:00.408 PM DEC 0.00000 mas/yr

Resolved by simbad.u-strasbg.fr (SIMBAD)

Source Radial Velocity 0.000 km/s lsrk z 0.000000000 Doppler Type RADIO

Target Type ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam 0.0 Jy

Continuum Linear Polarization 0.0 per cent

Continuum Circular Polarization 0.0 per cent

Peak Line Flux Density per Synthesized Beam 0.00000 Jy

Line Width 0.00000 km/s

Line Linear Polarization 0.0 per cent

Line Circular Polarization 0.0 per cent

Field Center Coordinates

Coord Type ☒ Relative ☐ Absolute

Offset Unit arcsec

#Pointings 1

RA [arcsec] 0.00000 Dec [arcsec] 0.00000

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

File Edit View Tool Search Help

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Spectral Spatial Field Setup

Spatial Image

05:35:39.108, -05:10:47.40 (J2000)

Image Filename: /jsky3/cache/jsky4810461270480412583.fits

FOV Parameters

- Representative Frequency (Sky): 0.000 GHz
- Antenna Diameter: 12m
- Antenna Beamsize (HPBW): 0.000 arcsec
- Show Antenna Beamsize: ☒

Image Query

Image Server: Digitized Sky (Version II) at ESO

Image Size(arcmin): 10.0

Query

Always double-check and fill in if necessary

HOPS 108

Source

Source Name: HOPS 108

Choose a Solar System Object? ☐ Name of object: Unspecified

System: ICRS Sexagesimal display? ☒

Source Coordinates

RA: 05:35:27.0696 PM RA: 0.00000 mas/yr

Dec: -05:10:00.408 PM DEC: 0.00000 mas/yr

Resolved by simbad.u-strasbg.fr (SIMBAD)

Source Radial Velocity: 0.000 km/s lsrk z: 0.000000000 Doppler Type: RADIO

Target Type: ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam: 30.0 mJy

Continuum Linear Polarization: 0.0 per cent

Continuum Circular Polarization: 0.0 per cent

Peak Line Flux Density per Synthesized Beam: 0.00000 Jy

Line Width: 0.00000 km/s

Line Linear Polarization: 0.0 per cent

Line Circular Polarization: 0.0 per cent

Field Center Coordinates

Coord Type: ☒ Relative ☐ Absolute

Offset Unit: arcsec

#Pointings: 1

RA [arcsec]: 0.00000 Dec [arcsec]: 0.00000

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

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Phase I: Science Proposal

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

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

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

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Editors

Spectral Spatial Field Setup

Spatial Image

Image Filename: /jsky3/cache/jsky4810461270480412583.fits

FOV Parameters

- Representative Frequency (Sky): 0.000 GHz
- Antenna Diameter: 12m
- Antenna Beamsize (HPBW): 0.000 arcsec
- Show Antenna Beamsize: ☒

Image Query

Image Server: Digitized Sky (Version II) at ESO

Image Size(arcmin): 10.0

Query

Always double-check and fill in if necessary

HOPS 108

Source

Source Name: HOPS 108

Choose a Solar System Object? ☐ Name of object: Unspecified

System: ICRS Sexagesimal display? ☒

Source Coordinates

RA: 05:35:27.0696 PM RA: 0.00000 mas/yr

Dec: -05:10:00.498 PM DEC: 0.00000 mas/yr

Resolved by simbad.u-strasbg.fr (SIMBAD)

Source Radial Velocity: 0.000 km/s lsrk z: 0.000000000 Doppler Type: RADIO

Target Type: ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam: 30.0 mJy

Continuum Linear Polarization: 0.0 per cent

Continuum Circular Polarization: 0.0 per cent

Peak Line Flux Density per Synthesized Beam: 0.00000 Jy

Line Width: 0.00000 km/s

Line Linear Polarization: 0.0 per cent

Line Circular Polarization: 0.0 per cent

Field Center Coordinates

Coord Type: ☒ Relative ☐ Absolute

Offset Unit: arcsec

#Pointings: 1

RA [arcsec]: 0.00000 Dec [arcsec]: 0.00000

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

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Phase I: Science Proposal

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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

Always double-check and fill in if necessary

Source Name: hops 370

Source Coordinates: RA: 05:35:27.6220, Dec: -05:09:33.778

Source Radial Velocity: 0.000 km/s

Target Type: Individual Pointing(s)

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam: 1.00000 mJy

Field Center Coordinates

Coord Type: Relative

Offset Unit: arcsec

#Pointings: 1

RA [arcsec]: 0.00000, Dec [arcsec]: 0.00000

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

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 - Control and Performance
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Editors

Spectral Setup

Visualisation

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 no more than 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 to 6, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LOD here is for experimentation only - actual setup determined by the windows

Observed Frequency (GHz)

Rest Frequency (GHz)

Overlays:

- ☒ Receiver Bands
- ☒ Transmission
- ☒ OSB Image
- ☐ Spectral Lines

Select Lines to Overlay

Four Column Density: ☒ Automatic Choice ☐ Manual Choice 5.186mm (7th Octile)

Pan to Spectral Window Zoom to Band Reset

Spectral Type

- ☐ Spectral Line
- ☒ Single Continuum
- ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Single Continuum

Receiver Band 9 [84.0-116.0 GHz]

Reset to Standard Frequency

Sky Frequency 97.500000 GHz

Rest Frequency 97.500000 GHz

☒ Low spectral resolution (TDM)
☐ High spectral resolution (FDM)

Baseband-1	Fraction	Centre Freq (rest,topo)	Centre Freq (sky,topo)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)		90.500000 GHz	90.500000 GHz	Single Continuum	1875.000 MHz 6211 km/s, 31.250 MHz 103.519 km/s	1	

Feedback

Validation Validation History Log

Contextual Help

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Phase 1: Science Proposal

New Science Proposal

Create Science Goals

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Submit Science Proposal

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ALMA Observing Tool (Validation OT) - Example 1

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 - Calibration Setup
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Spectral Spatial Spectral Setup

Visualisation

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 no more than 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 to 6, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LOD here is for experimentation only - actual setup determined by the windows

Selected band (blue)

Overlays: ☒ Receiver Bands ☒ Transmission ☒ DSB Image ☐ Spectral Lines Select Lines to Overlay

Column Density: ☒ Automatic Choice ☐ Manual Choice [0.913mm (3rd Octile)]

Pan to Spectral Window Zoom to Band Reset

Spectral Type: ☐ Spectral Line ☒ Single Continuum ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired: ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Single Continuum

Receiver Band: 7 [275.0-373.0 GHz] (circled in red)

Reset to Standard Frequency

Sky Frequency: 343.50000 GHz

Rest Frequency: 343.500000 GHz

Low spectral resolution (TDM) ☒ High spectral resolution (FDM) ☐

Baseband-1	Fraction	Centre Freq (rest, topol)	Centre Freq (sky, topol)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)		336.50000 GHz	336.50000 GHz	Single Continuum	1875.000 MHz/ 1670 km/s, 31.250 MHz/27.841 km/s	1	

Feedback

Validation Validation History Log

Overview

Contextual Help

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Phase I: Science Proposal

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

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Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

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 - Calibration Setup
 - Control and Performance
 - Technical Justification

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Spectral | Spatial | Spectral Setup

Visualisation

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 no more than 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 to 6, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LOD here is for experimentation only - actual setup determined by the windows

Observed Frequency (GHz)

Rest Frequency (GHz)

Basebands

Sidebands

Local Oscillator

Selected band (blue)

Overlays:

- ☒ Receiver Bands
- ☒ Transmission
- ☒ DSB Image
- ☒ Spectral Lines

Select lines to overlay

Column Density: ☒ Automatic Choice ☐ Manual Choice [0.913mm (3rd Octile)]

Pan to Spectral Window Zoom to Band Reset

Spectral Type

- ☐ Spectral Line
- ☒ Single Continuum
- ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Single Continuum

Receiver Band: 7 [275.0-373.0 GHz]

Reset to Standard Frequency

Sky Frequency: 343.50000 GHz

Rest Frequency: 343.500000 GHz

- ☐ Low spectral resolution (TDM)
- ☒ High spectral resolution (FDM)

Baseband-1	Fraction	Centre Freq (rest, topol)	Centre Freq (sky, topol)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)		336.50000 GHz	336.50000 GHz	Single Continuum	1875.000 MHz/ 1670 km/s), 31.250 MHz/27.841 km/s)	1	

Feedback

Validation | Validation History | Log

Contextual Help

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Phase 1: Science Proposal

New Science Proposal

Create Science Goals

Validate Science Proposal

Submit Science Proposal

Click on the overview steps to view the contextual help

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Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

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Unsubmitted Proposal

Example 1

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ScienceGoal (Science Goal 1)

General

Field Setup

Spectral Setup (one per SG)

Calibration Setup

Control and Performance

Technical Justification

Editors

Spectral Spatial Spectral Setup

Polarization products desired

XX DUAL FULL

Spectral Setup Errors

Single Continuum

Receiver Band 7 [275.0-373.0 GHz]

Reset to Standard Frequency

Sky Frequency 343.50000 GHz

Rest Frequency 343.500000 GHz

Low spectral resolution (TDM)

High spectral resolution (FSM)

To set the basebands

Scroll down!

Spectral windows

Double-click

Baseband-1	Fraction	Centre Freq (rest.topo)	Centre Freq (sky.topo)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)		336.50000 GHz	336.50000 GHz	Single Continuum	1875.000 MHz(1678 km/s), 31.250 MHz(27.841 km/s)	1	
56.594 MHz(52 km/s), 30.518 kHz(0.027 km/s) 117.188 MHz(104 km/s), 61.035 kHz(0.054 km/s) 234.375 MHz(209 km/s), 122.078 kHz(0.109 km/s) 468.750 MHz(418 km/s), 244.141 kHz(0.218 km/s) 937.500 MHz(835 km/s), 488.281 kHz(0.435 km/s) 1875.000 MHz(1678 km/s), 976.563 kHz(0.870 km/s)							
<input type="checkbox"/> Show image spectral windows							
Baseband-2		338.50000 GHz	338.50000 GHz	Single Continuum	1875.000 MHz(1678 km/s), 31.250 MHz(27.841 km/s)	1	
<input type="checkbox"/> Show image spectral windows							
Baseband-3		348.50000 GHz	348.50000 GHz	Single Continuum	1875.000 MHz(1613 km/s), 31.250 MHz(26.882 km/s)	1	
<input type="checkbox"/> Show image spectral windows							
Baseband-4		350.50000 GHz	350.50000 GHz	Single Continuum	1875.000 MHz(1604 km/s), 31.250 MHz(26.729 km/s)	1	
<input type="checkbox"/> Show image spectral windows							

Representative Frequency

The representative frequency is used in conjunction with the sensitivity entered on the 'Control and Performance' page to estimate the required observing time and to set the size of the antenna beam shown in the 'Spatial Visual' editor. If the transition you are most interested in does not fall in the centre of the chosen spectral window, its frequency can be changed here. The sky equivalents of the representative frequency are shown in the targets table below.

350.50000 GHz

Rest Frequencies

Feedback

Validation Validation History Log

Overview

Contextual Help

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 - Clicking on the icon in the toolbar
 - 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

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

Project Structure

- Proposal
- Unsubmitted Proposal
- Example 1
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup ← (one per SG)
 - Control and Performance
 - Technical Justification

Editors

Spectral | Spatial | Calibration Setup

Select calibration strategy.

Goal Calibrators

By default, calibrators will be selected automatically at runtime and a single observation will be used to calibrate the bandpass and flux scale.

- ☒ System-defined calibration (recommended)
- ☐ System-defined calibration (force separate amplitude calibration using solar-system object)
- ☐ User-defined calibration

Astrometry

If you wish positional accuracy that is better than that provided by default (see the Proposer's Guide for more information) then select enhanced accuracy.

- ☒ Standard positional accuracy (default)
- ☐ Enhanced positional accuracy

DGC Override (observatory-use only)

Feedback

Validation | Validation History | Log

Overview

Contextual Help

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- 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

Click on the overview steps to view the contextual help.

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

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

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- Unsubmitted Proposal
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 - Control and Performance
 - Technical Justification

(one set of parameters per SG)

Editors

Control and Performance

Configuration Information

Antenna Beamsize ($1.13 \times \lambda / D$) 12m 16.613 arcsec 7m 28.480 arcsec

Number of Antennas 12m 43 7m 10 TP 3

ACA 7m configuration Most compact 12m configuration Most extended 12m configuration

Longest baseline 0.049 km 0.161 km 8.548 km

Synthesized beamsize 3.647 arcsec 0.988 arcsec 0.029 arcsec

Shortest baseline 0.009 km 0.015 km 0.113 km

Maximum recoverable scale 19.205 arcsec 8.388 arcsec 0.414 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam) ☒ Single ☐ Range ☐ Any ☐ Standalone ACA

0.00000 arcsec

Largest Angular Structure in source Undefined arcsec

Desired sensitivity per pointing 0.00000 Jy equivalent to Infinity K

Bandwidth used for Sensitivity AggregateBandWidth Frequency Width 7.500000 GHz

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

Science Goal time estimate (includes configuration and beam information) Time Estimate

Simultaneous 12-m and ACA observations ☐ Yes ☒ No

Are the observations time-constrained? ☐ Yes ☒ No

Feedback

Validation Validation History Log

Contextual Help

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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

Example 1: Continuum observations of several targets

(one set of parameters per SG)

What do you want?

ALMA Observing Tool (Validation OT) - Example 1

Project Structure

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 - Technical Justification

Editors

Control and Performance

Configuration Information

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Science Goal time estimate (includes configuration and beam information) Time Estimate

Simultaneous 12-m and ACA observations ☐ Yes ☒ No

Are the observations time-constrained? ☐ Yes ☒ No

Feedback

Validation Validation History Log

Overview

Contextual Help

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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

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

File Edit View Tool Search Help

Project Structure

Unsubmitted Proposal

Example 1

Planned Observing

ScienceGoal (Science Goal 1)

General

Field Setup

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Control and Performance

Technical Justification

(one set of parameters per SG)

Recommended

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 ($1.13 \times \lambda / D$) 12m 16.613 arcsec 7m 28.480 arcsec

Number of Antennas 12m 43 7m 10 TP 3

ACA 7m configuration Most compact 12m configuration Most extended 12m configuration

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Shortest baseline 0.009 km 0.015 km 0.113 km

Maximum recoverable scale 19.205 arcsec 8.388 arcsec 0.414 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam) ☐ Single ☒ Range ☐ Any ☐ Standalone ACA

0.50000 arcsec to 0.80000 arcsec

Largest Angular Structure in source 5.0 arcsec

Desired sensitivity per pointing 3.00000 mJy equivalent to 46.653 mK @ 0.800 " and 0.11943 K @ 0.500 "

Bandwidth used for Sensitivity AggregateBandWidth Frequency Width 7.500000 GHz

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

Science Goal time estimate (includes configuration and beam information) Time Estimate

Simultaneous 12-m and ACA observations ☐ Yes ☒ No

Are the observations time-constrained? ☐ Yes ☒ No

What do you want?

Feedback

Validation Validation History Log

Contextual Help

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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

Example 1: Continuum observations of several targets

(one set of parameters per SG)

Control and Performance

Configuration Information

Antenna Beamsize ($1.13 \times \lambda / D$) 12m 16.613 arcsec 7m 28.480 arcsec

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Largest Angular Structure in source 5.0 arcsec

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Bandwidth used for Sensitivity Frequency Width 7.500000 GHz

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

Science Goal time estimate (includes configuration and beam information)

Simultaneous 12-m and ACA observations ☐ Yes ☒ No

Are the observations time-constrained? ☐ Yes ☒ No

Time Estimate

Note: The time in brackets is that required to reach the sensitivity. Operational requirements often mean that the actual observed time is longer, especially for mosaics. Please see the User Manual for more details.

Input Parameters

Requested sensitivity 3.000 mJy

Bandwidth used for sensitivity 7.500 GHz

Representative frequency (sky, first source) 350.500 GHz

Estimated Total time for Science Goal 20.12 min

Possible Configuration Combinations

12-m (1)	12-m (2)	7-m	TP	Nominal Beam(1)	Max expected avail. gain
C43-2	None	No	No	0.64 x 0.71	1.5

Configurations are automatically selected

Contextual Help

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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

Example 1: Continuum observations of several targets

(one set of parameters per SG)

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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 ($1.13 \times \lambda / D$) 12m 16.613 arcsec 7m 28.480 arcsec

Number of Antennas 12m 43 7m 10 TP 3

ACA 7m configuration Most compact 12m configuration Most extended 12m configuration

Longest baseline 0.049 km 0.161 km 8.548 km

Synthesized beamsize 3.647 arcsec 0.988 arcsec 0.029 arcsec

Shortest baseline 0.009 km 0.015 km 0.113 km

Maximum recoverable scale 19.205 arcsec 8.388 arcsec 0.414 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam) ☐ Single ☒ Range ☐ Any ☐ Standalone ACA

0.50000 arcsec to 0.80000 arcsec

Largest Angular Structure in source 15.00000 arcsec

Desired sensitivity per pointing 3.00000 mJy equivalent to 46.653 mK @ 0.800 " and 0.11943 K @ 0.500 "

Bandwidth used for Sensitivity AggregateBandWidth Frequency Width 7.500000 GHz

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

Science Goal time estimate (includes configuration and beam information)

Simultaneous 12-m and ACA observations ☐ Yes ☒ No

Are the observations time-constrained? ☐ Yes ☒ No

Time Estimate

Note: The time in brackets is that required to reach the sensitivity. Operational requirements often mean that the actual observed time is longer, especially for mosaics. Please see the User Manual for more details.

Input Parameters

Requested sensitivity 3.000 mJy

Bandwidth used for sensitivity 7.500 GHz

Representative frequency (sky, first source) 350.500 GHz

Estimated Total time for Science Goal 1.16 h

Cluster 1

Source Name	RA	Dec	Velocity
HOPS_108	05:35:27.0696	-05:10:00.408	0.000 km/s
hops_370	05:35:27.6220	-05:09:33.778	0.000 km/s

Possible Configuration Combinations

12-m (1)	12-m (2)	7-m	TP	Nominal Beam(1)	Max expected axial ratio
43-2	None	Yes	No	0.64 x 0.71	1.5

Input Parameters

Precipitable water vapour (all sources) 0.913mm (3rd Octile)

Time required for 12m (1) [43-2]

Time on source per pointing (first source)	2.52 min [262.93 ms]
Total number of pointings (all sources)	2
Number of tunings	1
Total time on source	5.04 min [525.87 ms]
Total calibration time	13.17 min
Other overheads	1.92 min
Total time for 1 SB execution	20.12 min
Number of SB executions	1
Total time to complete SB	20.12 min

Calibration Breakdown per SB execution

2 x Pointing	4.00 min
1 x Amplitude/bandpass	5.00 min
2 x Phase	60.00 s
2 x Atmospheric	1.33 min
Calibration overheads	1.83 min

Additional Arrays

ACA 7-m on-source time	24.19 min
Total 7-m time	49.76 min
Total ACA time (max(t_7-m, t_TPI))	49.76 min

Estimated total time for cluster 1 1.16 h

Contextual Help

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Phase 1: 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

Now we need also ACA

Example 1: Continuum observations of several targets

File Edit View Tool Search Help

ALMA Observing Tool (Validation OT) - Example 1

Perspective 1

Project Structure

Proposal Program

Unsubmitted Proposal

Example 1

Proposal

Planned Observing

ScienceGoal (Science Goal 1)

General

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Control and Performance

Technical Justification

Editors

Spectral Spatial Technical Justification

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

Sensitivity

Requested RMS over 7.500 GHz is 3.00 mJy For a peak flux density of 1.00 mJy, the S/N is 0.3

Achieved RMS over the total 7.500 GHz bandwidth is 125.15 uJy, 1.95 mK-4.98 mK For a continuum flux density of 1.00 mJy, 15.55 mK-39.81 mK, the achieved S/N is 8.0

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.

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.

Imaging

Requested angular resolution 800.00 mas - 500.00 mas

Requested Largest Angular Scale 15.00 arcsec

Justify the chosen angular resolution and largest angular scale for the source(s) in this Science Goal

Correlator configuration

Justify your correlator set-up with particular reference to the number of spectral resolution elements per line width.

You may want to consider spectral averaging to lower the data rate

Feedback

Validation Validation History Log

Overview

Contextual Help

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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

Summary of the requested performance

Example 1: Continuum observations of several targets

ALMA Observing Tool (Validation OT) - Example 1

File Edit View Tool Search Help

Project Structure

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 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification**

Editors

Spectral Spatial Technical Justification

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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.

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

Imaging

Requested angular resolution 800.00 mas - 500.00 mas

Requested Largest Angular Scale 15.00 arcsec

Justify the chosen angular resolution and largest angular scale for the source(s) in this Science Goal

Correlator configuration

Justify your correlator set-up with particular reference to the number of spectral resolution elements per line width.

You may want to consider spectral averaging to lower the data rate

Contextual Help

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Phase I: Science Proposal

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

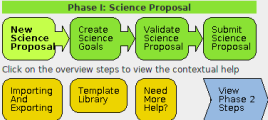
Click on the overview steps to view the contextual help

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

Summary of the requested performance

Most justify your selection

Are we happy?
Lets validate!



Example 1: Continuum observations of several targets

[illegible]

Example 1: Continuum observations of several targets

File Edit View Tool Search Help

Project Structure

Proposal | Program

Unsubmitted Proposal

Example 1

Proposal

Planned Observing

ScienceGoal (Science Goal 1)

General

Field Setup

Spectral Setup

Calibration Setup

Control and Performance

Technical Justification

Editors

Spectral | Spatial | Technical Justification

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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.

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.

Imaging

Requested angular resolution 800.00 mas - 500.00 mas

Requested Largest Angular Scale 5.00 arcsec

Justify the chosen angular resolution and largest angular scale for the source(s) in this Science Goal

Correlator configuration

Justify your correlator set-up with particular reference to the number of spectral resolution elements per line width.

Feedback

Validation | Validation History | Log

0 errors, 0 warnings

No problems found

Description

Suggestion

Ready to submit!

Overview

Contextual Help

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

2. Create a new proposal by either:

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

3. 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

Click on the overview steps to view the contextual help

Importing And Exporting

Template Library

Need More Help?

View Phase 2 Steps

The screenshot shows the ALMA Observing Tool (Cycle 8 2021) interface. On the left is the 'Project Structure' tree, which includes 'Example 1' and 'Planned Observing'. The main editor area has three tabs: 'Spectral', 'Spatial', and 'Technical Justification'. The 'Technical Justification' tab is active, displaying a form for entering technical details. A large red box is overlaid on the center of the screen with the text 'Check Point! Save your project now (aot file)'. Below this, another red box highlights the 'Feedback' panel, which shows '0 errors, 0 warnings' and 'No problems found'. At the bottom of the screen, there is a 'Contextual Help' section with instructions on how to create a new proposal and a 'Phase I: Science Proposal' flowchart.

Check Point!

Save your project now (aot file)

Ready to submit!

Contextual Help

- Please ensure you and your co-Is are registered with the [ALMA Science Portal](#).
- Create a new proposal by either:
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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]
    
```

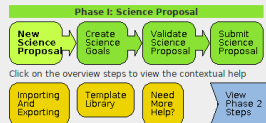
Click on the overview steps to view the contextual help

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

Ready to submit!

Check Point!

Save your project now (aot file)



Example 1: Continuum observations of several targets

The screenshot displays the ALMA Observing Tool (Validation OT) - Example 1 interface. The interface is divided into three main sections: a menu bar on the left, a central workspace, and a bottom panel.

Menu Bar: Located at the top left, it includes File, Edit, View, Tool, Search, and Help. The 'File' menu is expanded, showing options like New Proposal, New DDT Proposal, New Supplemental Call Proposal, Open Project, Open Project as New Proposal, Save, Save As..., Show ALMA Template Library, Use Project as Template, Validate, Submit Project, Preferences, Save Preferences, and Quit. The 'Submit Project' option is highlighted, and a tooltip 'Submit Project to ALMA' is visible.

Central Workspace: This area is divided into two panes. The left pane is titled 'Editors' and contains a 'Technical Justification' tab. The right pane is titled 'Feedback' and contains a 'Validation' tab.

Editors Pane (Technical Justification): This pane contains a form for entering technical details. It includes sections for Sensitivity, Imaging, and Correlator configuration. The Sensitivity section includes fields for Requested RMS, Achieved RMS, and S/N. The Imaging section includes fields for Requested angular resolution and Requested Largest Angular Scale. The Correlator configuration section includes a field for the number of spectral resolution elements per line width. The form also includes a 'Justify your requested RMS and resulting S/N for the spectral line and/or continuum observations' section.

Feedback Pane (Validation): This pane contains a form for entering validation details. It includes a 'Validation' section with a field for the number of spectral resolution elements per line width. The form also includes a 'Justify your chosen angular resolution and largest angular scale for the source(s) in this Science Goal' section.

Bottom Panel: This panel contains two sections: 'Contextual Help' and 'Phase I: Science Proposal'.

Contextual Help: This section provides instructions for users. It includes a list of steps: 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.

Phase I: Science Proposal: This section shows a flowchart of the proposal process. It includes steps like New Science Proposal, Create Science Goals, Validate Science Proposal, and Submit Science Proposal. It also includes a 'View Phase 2 Steps' button.

Example 1: Continuum observations of several targets

[illegible]

Example 1: Continuum observations of several targets

ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Example 1

Submitted Proposal (red label)

Code

Contextual Help

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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

Example 1: Continuum observations of several targets

ALMA Observing Tool (Cycle 8 2021 (MainCall-Phase1)) - Example 1

File Edit View Tool Search Help

Project Structure

- Proposal
 - Generate SBs from the Selected Goal Ctrl-B
 - Display Project Time Summary
 - Generate Phase 2 SBs from all the Science Goals Ctrl-B
 - Show Printable Summary of Proposal and Science Goals
 - Generate a PDF of Whole Proposal
- Unsubmitted Proposals
- Example 1
 - Proposal
 - Disable Edit Protect
 - Generate a PDF of Whole Proposal
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Example 1

Principal Investigator

(az Rodriguez (ana.diazrodriguez@manchester.ac.uk) Select PI...

Main Project Information

Project Example 1

Assigned Priority

Project Code None Assigned

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

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

Lets propose!

Example 2: Line observations of single target (e.g. study kinematics of a protostellar disk)

- 1 Science Goal with 1 target

To do:

- 1) Open template created before
- 2) Add Science Goal
- 3) Fill in General and Source Setup fields
- 4) Save it as Example 2

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
 - Example 2
 - Proposal
 - Planned Observing (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Field Setup

Spatial Image

HOPS 370

Source

Source Name: HOPS 370

Choose a Solar System Object? ☐ Name of object: Unspecified

System: ICRS Sexagesimal display? ☒

Source Coordinates

RA: 05:35:27.336 PM RA: 0.00000 mas/yr

DEC: -05:09:33.778 PM DEC: 0.00000 mas/yr

Source Radial Velocity: 8.0 km/s Isrk: 0.000026686 Doppler Type: RADIO

Target Type: ☒ Individual Pointing(s) ☐ Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam: 1.00000 Jy

Continuum Linear Polarization: 0.0 per cent

Continuum Circular Polarization: 0.0 per cent

Peak Line Flux Density per Synthesized Beam: 50.00000 mJy

Line Width: 10.00000 km/s

Line Linear Polarization: 0.0 per cent

Line Circular Polarization: 0.0 per cent

Field Center Coordinates

Coord Type: ☒ Relative ☐ Absolute

Offset Unit: arcsec

#Pointings: 1

RA [arcsec]	Dec [arcsec]
0.00000	0.00000

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

Most fill in line info

Example 2: Line observations of single target

The screenshot displays the ALMA Observing Tool (Validation OT) - Example 2 interface. The interface is divided into several sections:

- Project Structure:** Located on the left, it shows a tree view of the project. The 'Spectral Setup' item is highlighted with a red arrow.
- Spectral Setup:** The main window for configuring spectral observations. It includes a frequency plot (Rest Frequency (GHz) vs. Flux Density) and various configuration options.
 - Overlays:** Includes checkboxes for Receiver Bands, Transmission, OSB Image, and Spectral Lines.
 - Water Vapour Column Density:** Set to Automatic Choice.
 - Spectral Type:** Radio buttons for Spectral Line (selected), Single Continuum, and Spectral Scan. A red arrow points to this section.
 - Spectral Setup Errors:** A message indicating 'No spectral window in the list. No suitable receiver band for the range {0.0 GHz, 0.0 GHz}'.
 - Spectral Line:** A table for defining spectral lines.
- Spectral Line Table:** A table with columns: Fraction, Centre Freq (rest, lsr), Centre Freq (sky, bar), Transition, Bandwidth, Resolution (smoothed), Spec. Avg., and Representative Window.
- Buttons:** Below the table, there are buttons for 'Add spectral window centred on a spectral line' (highlighted with a red circle and arrow 2), 'Add spectral window manually', and 'Delete'.

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Create spectral windows centred on spectral lines

Transition Filter

Proposal: COP-17 for "Radio"

Include description

Frequency Filters

ALMA Band

Sky Frequency (GHz)

Min: 31.3 Max: 950

Receiver/Back End Configuration

All lines

Potentially selectable lines

Lines in defined spws

Filtering unobservable lines

Upper-state Energy (K)

Min: 0 Max: 0

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 Splatologue.

Search Online

Reset Filters

Transitions matching your filter settings:
(double-click column header for primary sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Loas Intensity	Sij μ^2	Catalog
C5H J=35/2-33/2, Q=3/2, F=17.16, l=e	2,4-Pentadiynylidyne	84.108238 GHz	84.103183 GHz	71.861 K	4.7	401.709 D ²	Offline
C5H J=35/2-33/2, Q=3/2, F=18.17, l=e	2,4-Pentadiynylidyne	84.108398 GHz	84.103344 GHz	71.861 K	4.7	425.314 D ²	Offline
C5H J=35/2-33/2, Q=3/2, F=17.16, l=e	2,4-Pentadiynylidyne	84.110087 GHz	84.105032 GHz	71.862 K		401.692 D ²	Offline
C5H J=35/2-33/2, Q=3/2, F=18.17, l=e	2,4-Pentadiynylidyne	84.110244 GHz	84.105189 GHz	71.862 K		425.395 D ²	Offline
C4H v7 = 1 J=17/2-15/2, Q=1/2, l=e	1,3-Butadienyl radical	84.123003 GHz	84.117948 GHz	211.671 K		2.112.771 D ²	Offline
CH3CH2CN v=0 11(10,11)-10(1,10)	Ethyl Cyanide	84.151838 GHz	84.146781 GHz	28.102 K		0.110.328 D ²	Offline
CH3OH v t=1 11(10,11)-11(1,0)	Methanol	84.158571 GHz	84.153513 GHz	1066.119 K		1.459 D ²	Offline
U-84163	UNIDENTIFIED	84.163000 GHz	84.157942 GHz		0.06		Offline
SiO v=1 2-1	Silicon Monoxide	84.164253 GHz	84.159195 GHz	1753.828 K		19.441 D ²	Offline
c-H13CCCH 2(1,2)-1(0,1)	Cyclopropenylidene	84.185621 GHz	84.180562 GHz	6.331 K		0.1317.24 D ²	Offline
U-84215	UNIDENTIFIED	84.215000 GHz	84.209939 GHz		0.08		Offline
CH3CN v8=1 J=36-36, K=3-1	Methyl Cyanide	84.271390 GHz	84.266326 GHz	1139.034 K		0.122 D ²	Offline
SO2 v=0 32(5,27)-31(6,26)	Sulfur dioxide	84.320876 GHz	84.315809 GHz	549.36 K		0.113.463 D ²	Offline
U-84356	UNIDENTIFIED	84.356000 GHz	84.350930 GHz		0.07		Offline
U-84385	UNIDENTIFIED	84.385000 GHz	84.379929 GHz		0.08		Offline
34SO 2(2)-1(1)	Sulfur Monoxide	84.410690 GHz	84.405617 GHz	19.233 K		0.033.534 D ²	Offline
CH3OH v t=0 13(-3,11)-14(-2,13)	Methanol	84.423776 GHz	84.418702 GHz	273.898 K		0.84.303 D ²	Offline
13CH3OH v t=0 13(-3,11)-12(-4,9)	Methanol	84.444140 GHz	84.439065 GHz	269.033 K		3.267 D ²	Offline
U-84468	UNIDENTIFIED	84.462006 GHz	84.457033 GHz		0.08		Offline

Add to spectral window list

Spectral windows in this baseband (maximum of four)

Transition	Description	Rest Frequency	Sky Frequency
------------	-------------	----------------	---------------

Remove spectral window(s)

Cancel Ok

The representative frequency is used in conjunction with the sensitivity entered on the 'Control and Performance' page to estimate the required observing time and to set the size of the antenna beam shown in the 'Spatial Visual editor. If the transition you are most interested in does.

The spectral line
selector tool

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Create spectral windows centred on spectral lines

Filter

Transitions matching your filter settings:
(double-click column header for primary sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Loias Intensity	Sij μ^2	Catalog
CO v=2 3-2	Carbon Monoxide	339.499527 GHz	339.479124 GHz	6161.831 K	0.036 D ²		Offline
CO v=1 3-2	Carbon Monoxide	342.647656 GHz	342.627064 GHz	3116.561 K	0.710.036 D ²		Offline
CO v=0 3-2	Carbon Monoxide	345.795990 GHz	345.775208 GHz	33.192 K	700.036 D ²		Offline
CO+ J=3-2, F=5/2-3/2	Carbon Monoxide Ion	353.741285 GHz	353.720026 GHz		0.111.2 D ²		Offline
CO+ J=3-2, F=7/2-5/2	Carbon Monoxide Ion	354.014254 GHz	353.992979 GHz		0.181.713 D ²		Offline

double-click to add line

Add to spectral window list

Spectral windows in this baseband (maximum of four)

Transition	Description	Rest Frequency	Sky Frequency
------------	-------------	----------------	---------------

Remove spectral window(s)

Cancel Ok

The representative frequency is used in conjunction with the sensitivity entered on the 'Control and Performance' page to estimate the required observing time and to set the size of the antenna beam shown in the 'Spatial Visual' editor. If the transition you are most interested in does.

Example 2: Line observations of single target

Filter

Transition Filter

CO v=0 3-2

Frequency Filters

ALMA Band

1 2 3 4 5 6 7 8 9 10

Sky Frequency (GHz)

Min 275 Max 375

Receiver/Back End Configuration

☐ All lines

☒ Potentially selectable lines

☐ Lines in defined spws

☒ Filtering unobservable lines

Upper-state Energy (K)

Min 0 Max 0

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.

Search Online

Reset Filters

Transitions matching your filter settings:
(double-click column header for primary sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Lower Intensity	Sij μ^2	Catalog
CO v=0 3-2	Carbon Monoxide	345.795990 GHz	345.775208 GHz	33.192 K		70.0.036 D ⁺	Offline

Available lines to observe

Add to spectral window list

Spectral windows in this baseband (maximum of four)

Transition	Description	Rest Frequency	Sky Frequency
CO v=0 3-2	Carbon Monoxide	345.795990 GHz	345.775208 GHz

Selected lines

Remove spectral window(s)

Cancel Ok

The representative frequency is used in conjunction with the sensitivity entered on the 'Control and Performance' page to estimate the required observing time and to set the size of the antenna beam shown in the 'Spatial Visual' editor. If the transition you are most interested in does.

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Create spectral windows centred on spectral lines

Filter

Transitions matching your filter settings:
(double-click column header for primary sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Lowes Intensity	Sij μ^2	Offline	Catalog
SO2 v2=1 24(2,22)-23(3,21)	Sulfur dioxide	343.823751 GHz	343.803082 GHz	1057.883 K	3.3 19.557 D ²		Offline	
SO 3t v=0 8(8)-7(7)	Sulfur Monoxide	344.310612 GHz	344.289920 GHz	87.482 K	10.9318.555 D ²		Offline	
SO2 v=0 5(5,1)-6(4,2)	Sulfur dioxide	345.148971 GHz	345.128228 GHz	75.144 K	7.0.226 D ²		Offline	
SO2 v=0 13(2,12)-12(1,11)	Sulfur dioxide	345.338538 GHz	345.317784 GHz	92.984 K	7.7113.41 D ²		Offline	
SO2 v=0 62(18,46)-63(15,49)	Sulfur dioxide	345.338778 GHz	345.318024 GHz	2418.2 K	7.7123.422 D ²		Offline	
SO2 v=0 26(9,17)-27(8,20)	Sulfur dioxide	345.448984 GHz	345.428223 GHz	520.996 K	7.1.8.425 D ²		Offline	
SO2 v2=1 34(3,31)-34(2,32)	Sulfur dioxide	346.365261 GHz	346.344446 GHz	1352.769 K	8.654.169 D ²		Offline	
SO2 v2=1 19(1,19)-18(0,18)	Sulfur dioxide	346.379185 GHz	346.358368 GHz	930.6 K	8.643.218 D ²		Offline	
SO2 v=0 16(4,12)-16(3,13)	Sulfur dioxide	346.523878 GHz	346.503053 GHz	164.464 K	8.7323.099 D ²		Offline	
SO2 v2=1 18(4,14)-18(3,15)	Sulfur dioxide	346.591787 GHz	346.570957 GHz	960.78 K	23.127.645 D ²		Offline	
SO2 v=0 19(1,19)-18(0,18)	Sulfur dioxide	346.652169 GHz	346.631336 GHz	168.138 K	4.8241.984 D ²		Offline	

Available lines to observe

Selected lines

Spectral windows in this baseband (maximum of four)

Transition	Description	Rest Frequency	Sky Frequency
CO v=0 3-2		345.795990 GHz	345.775208 GHz

Remove spectral window(s)

Cancel Ok

The representative frequency is used in conjunction with the sensitivity entered on the 'Control and Performance' page to estimate the required observing time and to set the size of the antenna beam shown in the 'Spatial Visual' editor. If the transition you are most interested in does.

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Create spectral windows centred on spectral lines

Filter

Transitions matching your filter settings:
(double-click column header for primary sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Lowes Intensity	Sij μ^2	Offline	Catalog
SO2 v2=1 24(2,22)-23(3,21)	Sulfur dioxide	343.823751 GHz	343.803082 GHz	1057.883 K		3.3 19.557 D ²	Offline	
SO 3 ₂ v=0 8(8)-7(7)	Sulfur Monoxide	344.310612 GHz	344.289920 GHz	87.482 K		10.9318.555 D ²	Offline	
SO2 v=0 5(5,1)-6(4,2)	Sulfur dioxide	345.148971 GHz	345.128228 GHz	75.144 K		7.0.226 D ²	Offline	
SO2 v=0 13(2,12)-12(1,11)	Sulfur dioxide	345.338538 GHz	345.317784 GHz	92.984 K		7.7113.41 D ²	Offline	
SO2 v=0 62(16,46)-63(15,49)	Sulfur dioxide	345.338778 GHz	345.318024 GHz	2418.2 K		7.7123.422 D ²	Offline	
SO2 v=0 26(9,17)-27(8,20)	Sulfur dioxide	345.448984 GHz	345.428223 GHz	520.996 K		7.118.425 D ²	Offline	
SO2 v2=1 34(3,31)-34(2,32)	Sulfur dioxide	346.365261 GHz	346.344446 GHz	1352.769 K		8.654.169 D ²	Offline	
SO2 v=0 19(1,19)-18(0,18)	Sulfur dioxide	346.379185 GHz	346.358368 GHz	930.6 K		8.643.218 D ²	Offline	
SO2 v=0 16(4,12)-16(3,13)	Sulfur dioxide	346.523878 GHz	346.503053 GHz	164.464 K		8.7323.099 D ²	Offline	
SO2 v2=1 18(4,14)-18(3,15)	Sulfur dioxide	346.591787 GHz	346.570957 GHz	960.78 K		23.127.645 D ²	Offline	
SO2 v=0 19(1,19)-18(0,18)	Sulfur dioxide	346.652169 GHz	346.631336 GHz	168.138 K		4.8241.984 D ²	Offline	

Available lines to observe

Spectral windows in this baseband (maximum of four)

Transition	Description	Rest Frequency	Sky Frequency
SO2 v=0 5(5,1)-6(4,2)	Sulfur dioxide	345.148971 GHz	345.128228 GHz
CO v=0 3-2		345.795990 GHz	345.775208 GHz

Selected lines

Cancel Ok

The representative frequency is used in conjunction with the sensitivity entered on the 'Control and Performance' page to estimate the required observing time and to set the size of the antenna beam shown in the 'Spatial Visual' editor. If the transition you are most interested in does.

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Project Structure

- Proposal
- Unsubmitted Proposal
- Example 2
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Spectral Setup

Visualisation

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 no more than 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 to 6, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LOD, here is for experimentation only - actual setup determined by the windows

Observed Frequency (GHz)

Rest Frequency (GHz)

SO2 v=0 5(5,1)-6(4,2)

CO v=0 3-2

Overlays: ☒ Receiver Bands ☒ Transmission ☒ OSB Image ☐ Spectral Lines

Water Vapour Column Density: ☒ Automatic Choice ☐ Manual Choice 1.262mm (4th Octile)

Viewport:

Spectral Type

Spectral Type

- ☒ Spectral Line
- ☐ Single Continuum
- ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Baseband-1: Bandwidth and channel spacing must be set to all spectral windows.

Spectral Line

Fraction	Centre Freq (GHz)	Centre Freq (GHz)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1/2	345.14897 GHz	345.11902 GHz	SO2 v=0 5(5,1)-6(4,2)	Please select a correlator mode	1	
1/2	345.79599 GHz	345.76598 GHz	CO v=0 3-2	Please select a correlator mode	1	

☐ Show image spectral windows

Baseband-2

☐ Show image spectral windows

Baseband-3

☐ Show image spectral windows

Baseband-4

2 spectral windows in baseband-1

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
 - Example 2
 - Proposal
 - Planned Observing
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 - Spectral Setup**
 - Calibration Setup
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 - Technical Justification

Editors

Spectral Spatial Spectral Setup

Visualisation

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 no more than 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 to 6, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LOD, here is for experimentation only - actual setup determined by the windows

Spw bandwidth

Observed Frequency (GHz)

Rest Frequency (GHz)

Overlays: ☒ Receiver Bands ☒ Transmission ☒ OSB Image ☐ Spectral Lines

Water Vapour Column Density: ☒ Automatic Choice ☐ Manual Choice 1.262mm (4th Octile)

Viewport:

Spectral Type

Spectral Type

- ☒ Spectral Line
- ☐ Single Continuum
- ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Spectral Line

Baseband-1	Fraction	Centre Freq (rest, lork)	Centre Freq (sky, bar)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1/2	345.79598 GHz	345.76598 GHz	CO v=0 3-2	234.375 MHz 203 km/s, 282.227 kHz 0.245 km/s	2		
1/2	345.14897 GHz	345.11902 GHz	SO2 v=0 5(5,1)-6(4,2)	234.375 MHz 204 km/s, 282.227 kHz 0.245 km/s	2		

☐ Show image spectral windows

Baseband-2

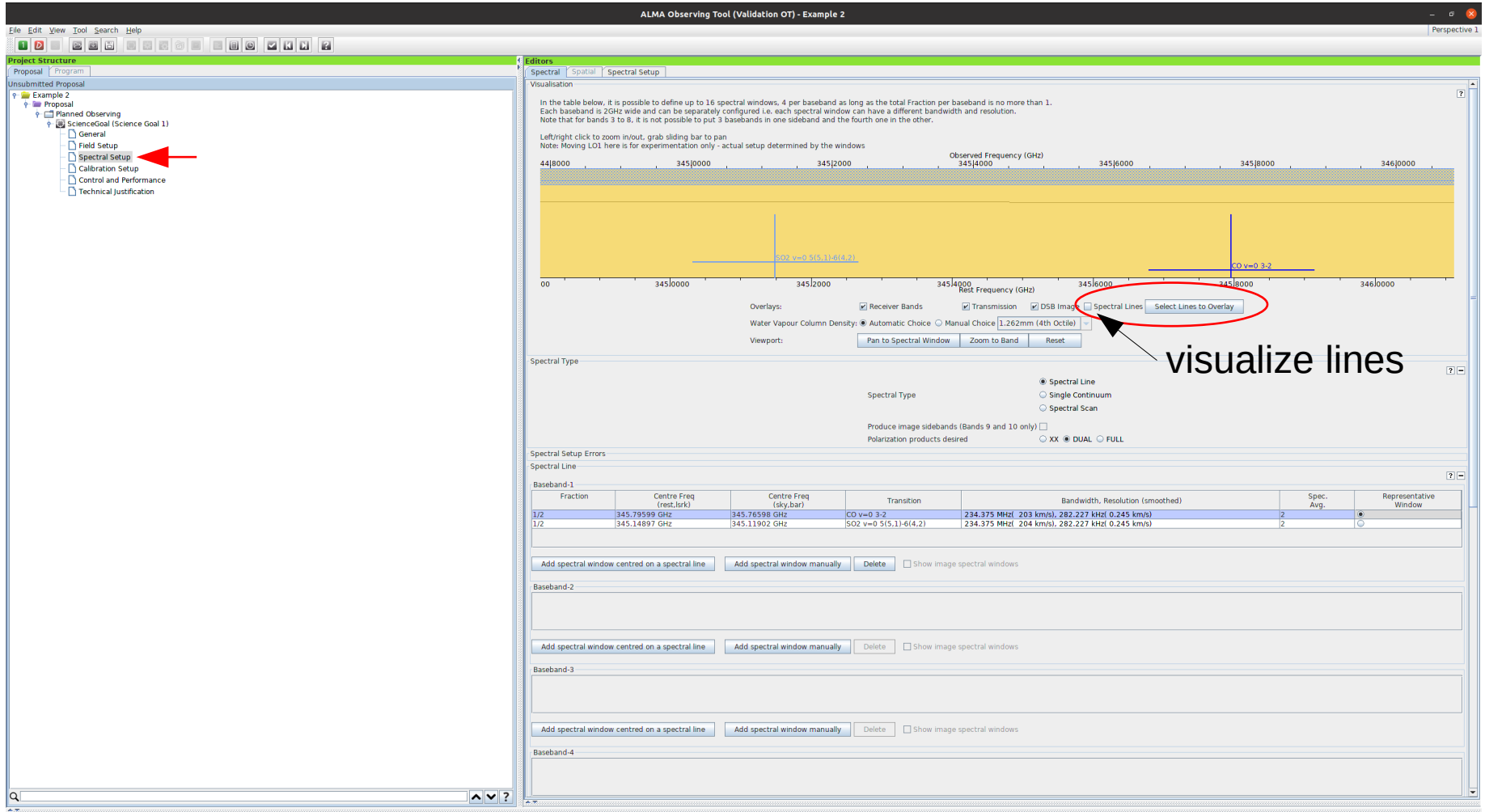
☐ Show image spectral windows

Baseband-3

☐ Show image spectral windows

Baseband-4

Example 2: Line observations of single target



Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Overlay lines

Transition Filter
(carbon*)

Frequency Filters
ALMA Band

Receiver/Back End Configuration
☐ All lines
☒ Potentially selectable lines
☐ Lines in defined spws
☒ Filtering unobservable lines

Upper-state Energy (K)
Min 0 Max 0

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.
Search Online
Reset Filters

Transitions matching your filter settings:
(double-click column header for primary sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Lowas Intensity	Sij μ^2	Catalog
C365 v=0 7-6	Carbon Monosulfide	332.510856 GHz	332.510856 GHz	63.836 K		26.836 D ³	Offline
C345 v=1 7-6	Carbon Monosulfide	334.971096 GHz	334.971096 GHz	1322.083 K		26.237 D ³	Offline
C (33) β	Carbon Recombination Line	335.374569 GHz	335.374569 GHz	0 yk			Offline
OC345 29-28	Carbonyl Sulfide	343.983267 GHz	343.983267 GHz	247.67 K		0.614.842 D ³	Offline
CO v=0 3-2	Carbon Monoxide	345.795990 GHz	345.795990 GHz	33.192 K		70.036 D ³	Offline
C (37) γ	Carbon Recombination Line	346.931502 GHz	346.931502 GHz	0 yk			Offline

Select all

Add to Selected Transitions

Selected Transitions

Transition	Description	Rest Frequency	Sky Frequency
------------	-------------	----------------	---------------

Remove from selected transitions

Cancel Ok

Add spectral window centred on a spectral line Add spectral window manually Delete Show image spectral windows

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Overlay lines

Transition Filter
(carbon*)

Frequency Filters
ALMA Band

Receiver/Back End Configuration
☐ All lines
☒ Potentially selectable lines
☐ Lines in defined spws
☒ Filtering unobservable lines

Upper-state Energy (K)
☐ Min Max

Molecule Filter / Environment
Show

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

Transitions matching your filter settings:
(double-click column header for primary sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Lozas Intensity	Sij μ^2	Catalog
C365 v=0 7-6	Carbon Monosulfide	332.510856 GHz	332.510856 GHz	63.836 K			Offline
C345 v=1 7-6	Carbon Monosulfide	334.971096 GHz	334.971096 GHz	1322.083 K		26.836 D ^a	Offline
C (33) β	Carbon Recombination Line	335.374569 GHz	335.374569 GHz	0 yk		26.237 D ^a	Offline
OC345 29-28	Carbonyl Sulfide	343.983267 GHz	343.983267 GHz	247.67 K		0.614.842 D ^a	Offline
CO v=0 3-2	Carbon Monoxide	345.795990 GHz	345.795990 GHz	33.192 K		70.036 D ^a	Offline
C (37) γ	Carbon Recombination Line	346.931502 GHz	346.931502 GHz	0 yk			Offline

Add to Selected Transitions

Selected Transitions

Transition	Description	Rest Frequency	Sky Frequency
C365 v=0 7-6	Carbon Monosulfide	332.510856 GHz	332.510856 GHz
C345 v=1 7-6	Carbon Monosulfide	334.971096 GHz	334.971096 GHz
C (33) β	Carbon Recombination Line	335.374569 GHz	335.374569 GHz
OC345 29-28	Carbonyl Sulfide	343.983267 GHz	343.983267 GHz
CO v=0 3-2	Carbon Monoxide	345.795990 GHz	345.795990 GHz
C (37) γ	Carbon Recombination Line	346.931502 GHz	346.931502 GHz

Remove from selected transitions

Cancel

Selected lines

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
 - Example 2
 - Proposal
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 - ScienceGoal (Science Goal 1)
 - General
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 - Spectral Setup**
 - Calibration Setup
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 - Technical Justification

Editors

Spectral | Spatial | Spectral Setup

Visualisation

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 no more than 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 to 6, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LOD1 here is for experimentation only - actual setup determined by the windows

Observed Frequency (GHz)

Rest Frequency (GHz)

Overlays: ☒ Receiver Bands ☒ Transmission ☒ OSB Image ☒ Spectral Lines

Water Vapour Column Density: ☒ Automatic Choice ☐ Manual Choice 1.262mm (4th Octile)

Viewport:

Spectral Type

Spectral Type

- ☒ Spectral Line
- ☐ Single Continuum
- ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Spectral Line

Fraction	Centre Freq (rest, lork)	Centre Freq (sky, bar)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1/2	345.79598 GHz	345.76598 GHz	CO v=0 3-2	234.375 MHz (203 km/s), 282.227 kHz (0.245 km/s)	2	<input checked="" type="radio"/>
1/2	345.14897 GHz	345.11902 GHz	SO2 v=0 5(5,1)-6(4,2)	234.375 MHz (204 km/s), 282.227 kHz (0.245 km/s)	2	<input type="radio"/>

☐ Show image spectral windows

Baseband-2

☐ Show image spectral windows

Baseband-3

☐ Show image spectral windows

Baseband-4

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
 - Example 2
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral | Spatial | Spectral Setup

Visualisation

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 no more than 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 to 6, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LOD, here is for experimentation only - actual setup determined by the windows

Observed Frequency (GHz)

Rest Frequency (GHz)

Overlays: ☒ Receiver Bands ☒ Transmission ☒ OSB Image ☒ Spectral Lines

Water Vapour Column Density: ☒ Automatic Choice ☐ Manual Choice 1.262mm (4th Octile)

Viewport:

Spectral Type

Spectral Type

- ☒ Spectral Line
- ☐ Single Continuum
- ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Spectral Line

Fraction	Centre Freq (rest, lork)	Centre Freq (sky, bar)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1/2	345.79598 GHz	345.76598 GHz	CO v=0 3-2	234.375 MHz (203 km/s), 282.227 kHz (0.245 km/s)	2	<input checked="" type="radio"/>
1/2	345.14897 GHz	345.11902 GHz	SO2 v=0 5(5,1)-6(4,2)	234.375 MHz (204 km/s), 282.227 kHz (0.245 km/s)	2	<input type="radio"/>

☐ Show image spectral windows

Baseband-2

☐ Show image spectral windows

Baseband-3

☐ Show image spectral windows

Baseband-4

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Create spectral windows centred on spectral lines

Transition Filter
(carbon*)
+ CO(3-2) as "baseline"

Frequency Filters
ALMA Band: 1 2 3 4 5 6 7 8 9 10
Sky Frequency (GHz): Min 275 Max 375

Receiver/Back End Configuration
☐ All lines
☒ Potentially selectable lines
☐ Lines in defined spws
☒ Filtering unobservable lines

Upper-state Energy (K)
Min 0 Max 0

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.
Search Online
Reset Filters

Transitions matching your filter settings:
double-click column header for primary sort, single-click subsequent columns for secondary sorting. Single clicks will reverse sort order of already selected columns.)

Transition	Description	Rest Frequency	Sky Frequency	Upper-state Energy	Lowas intensity	Sij μ^2	Catalog
CO v=1 3-2	Carbon Monoxide	343.647656 GHz	342.627064 GHz	9116.561 K	0.71 0.636 D ²		Offline
CS v=0 7-6	Carbon Monosulfide	342.882857 GHz	342.862251 GHz	65.827 K	9.6526.836 D ²		Offline
CC 345 29-28	Carbonyl Sulfide	343.983267 GHz	343.962594 GHz	247.67 K	0.614.842 D ²		Offline
CO v=0 3-2	Carbon Monoxide	345.795990 GHz	345.775208 GHz	33.192 K	700.036 D ²		Offline
C (37) γ	Carbon Recombination Line	346.931502 GHz	346.910652 GHz	0 yK			Offline

Add to spectral window list

Spectral windows in this baseband (maximum of four)

Transition	Description	Rest Frequency	Sky Frequency
CC 345 29-28	Carbonyl Sulfide	343.983267 GHz	343.962594 GHz
SO2 v=0 5(5,1)-6(4,2)		345.148971 GHz	345.128228 GHz
CO v=0 3-2		345.795990 GHz	345.775208 GHz

Remove spectral window(s)

Cancel Ok

Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Project Structure

- Unsubmitted Proposal
- Example 2
 - Proposal
 - Planned Observing
 - Science Goal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup**
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral | Spatial | Spectral Setup

Visualisation

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 no more than 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 to 6, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LO1 here is for experimentation only - actual setup determined by the windows

Observed Frequency (GHz)

Rest Frequency (GHz)

Overlays: ☒ Receiver Bands ☒ Transmission ☒ OSB Image ☐ Spectral Lines

Water Vapour Column Density: ☒ Automatic Choice ☐ Manual Choice 1.262mm (4th Octile)

Viewport:

Spectral Type

Spectral Type

- ☒ Spectral Line
- ☐ Single Continuum
- ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Spectral Line

Baseband-1	Fraction	Centre Freq (rest, lork)	Centre Freq (sky, bar)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1/4	345.79599 GHz	345.76598 GHz	CO v=0 3-2	117.188 MHz/ 102 km/s, 282.227 kHz/ 0.245 km/s	1		
1/4	345.14897 GHz	345.11902 GHz	SO2 v=0 5(5,1)-6(4,2)	117.188 MHz/ 102 km/s, 282.227 kHz/ 0.245 km/s	2		
1/4	343.98327 GHz	343.95342 GHz	OC345 29-28	117.188 MHz/ 102 km/s, 282.227 kHz/ 0.246 km/s	2		

☐ Show image spectral windows

Baseband-2

1(Full)	333.00000 GHz	332.97110 GHz	Continuum	1875.000 MHz/ 1688 km/s, 31.250 MHz/ 28.136 km/s	1
---------	---------------	---------------	-----------	--	---

☐ Show image spectral windows

Baseband-3

☐ Show image spectral windows

Baseband-4

3 spectral windows in baseband-1

1 spectral windows in baseband-2

Modify accordingly

Example 2: Line observations of single target

Project Structure

- Unsubmitted Proposal
 - Example 2
 - Proposal
 - Planned Observing
 - Science Goal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup** (highlighted with a red arrow)
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral | Spatial | Spectral Setup

Visualisation

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 no more than 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 to 6, it is not possible to put 3 basebands in one sideband and the fourth one in the other.

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LO1 here is for experimentation only - actual setup determined by the windows

Observed Frequency (GHz)

330|0000 335|0000 340|0000 345|0000 350|0000 355|0000 360|0000

Continuum

(if the sidebands turn gray something is wrong!)

Viewport:

Spectral Type

☒ Spectral Line
☐ Single Continuum
☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Spectral Line

Baseband-1	Fraction	Centre Freq (rest, lork)	Centre Freq (sky, bar)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1/4	345.79599 GHz	345.76598 GHz	CO v=0 3-2	117.188 MHz 102 km/s, 282.227 kHz 0.245 km/s	1		
1/4	345.14897 GHz	345.11902 GHz	SO2 v=0 5(5,1)-6(4,2)	117.188 MHz 102 km/s, 282.227 kHz 0.245 km/s	2		
1/4	343.98327 GHz	343.95342 GHz	OC345 29-28	117.188 MHz 102 km/s, 282.227 kHz 0.246 km/s	2		

☐ Show image spectral windows

Baseband-2

1(Full)	333.00000 GHz	332.97110 GHz	Continuum	1875.000 MHz 1688 km/s, 31.250 MHz 28.136 km/s	1
---------	---------------	---------------	-----------	--	---

☐ Show image spectral windows

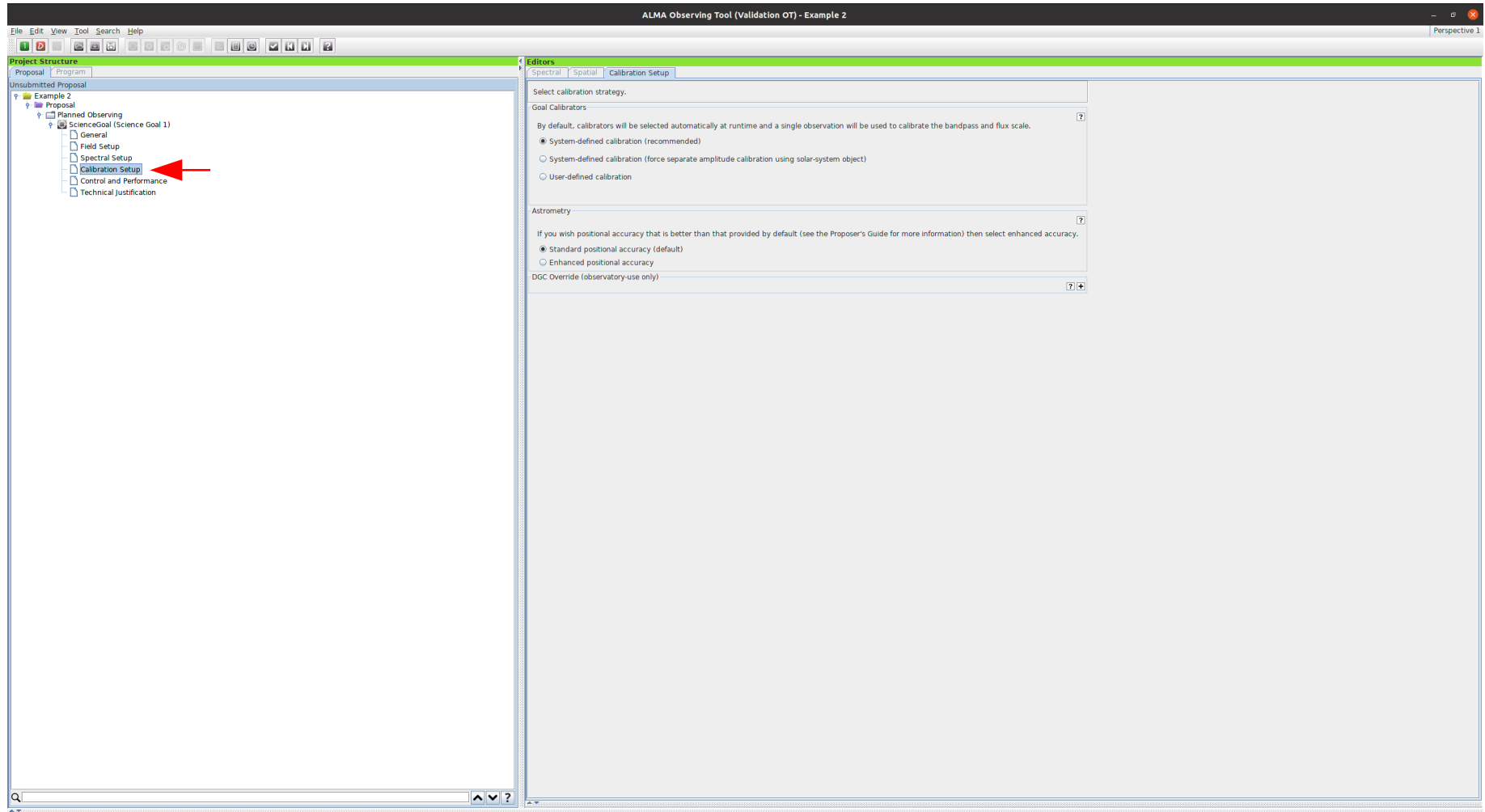
Baseband-3

Baseband-4

Modify accordingly

Explore different setups

Example 2: Line observations of single target



Example 2: Line observations of single target

ALMA Observing Tool (Validation OT) - Example 2

Project Structure

- Unsubmitted Proposal
- Example 2
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

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 ($1.13 \cdot \lambda / D$) 12m 16.841 arcsec 7m 28.870 arcsec

Number of Antennas 12m 43 7m 10 TP 3

ACA 7m configuration Most compact 12m configuration Most extended 12m configuration

Longest baseline 0.049 km 0.161 km 8.548 km

Synthesized beamsize 3.697 arcsec 1.002 arcsec 0.029 arcsec

Shortest baseline 0.009 km 0.015 km 0.113 km

Maximum recoverable scale 19.468 arcsec 8.503 arcsec 0.420 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam) ☐ Single ☒ Range ☐ Any ☐ Standalone ACA

0.50000 arcsec to 0.80000 arcsec

Largest Angular Structure in source 5.00000 arcsec

Desired sensitivity per pointing 5.00000 mJy equivalent to 79.899 mK @ 0.800 "

Bandwidth used for Sensitivity

Override OT's sensitivity-based time estimate (must be justified)

Science Goal time estimate (includes configuration and beam information)

Simultaneous 12-m and ACA observations

Are the observations time-constrained? ☐ Yes ☒ No

RepresentativeWindowResolution
RepresentativeWindowBandWidth
RepresentativeWindowResolution
AggregateBandwidth
LargestWindowBandwidth
FinestResolution
User

Explore the different options

- *RepresentativeWindowBandWidth*: the bandwidth of the spectral window chosen as the representative spectral window (and containing the *Representative Frequency*) in Section 6
- *RepresentativeWindowResolution* (default): the (Hanning-smoothed) spectral resolution of the representative spectral window, taking into account spectral averaging
- *AggregateBandwidth*: the summed bandwidth of all your selected spectral windows
- *LargestWindowBandwidth*: the bandwidth of your widest spectral window defined
- *FinestResolution*: the finest (Hanning-smoothed) resolution of any spectral window, taking into account spectral averaging
- *User*: a bandwidth of your choice (useful if you are intending to smooth your data after observation to achieve a certain S/N)

Example 2: Line observations of single target

Project Structure

- Proposal
- Unsubmitted Proposal
- Example 2
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

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 ($1.13 \times \lambda / D$) 12m 16.841 arcsec 7m 28.870 arcsec

Number of Antennas 12m 43 7m 10 TP 3

ACA 7m configuration Most compact 12m configuration Most extended 12m configuration

Longest baseline 0.049 km 0.161 km 8.548 km

Synthesized beamsize 3.697 arcsec 1.002 arcsec 0.029 arcsec

Shortest baseline 0.009 km 0.015 km 0.113 km

Maximum recoverable scale 19.468 arcsec 8.503 arcsec 0.420 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam) ☐ Single ☒ Range ☐ Any ☐ Standalone ACA

0.50000 arcsec to 0.80000 arcsec

Largest Angular Structure in source 5.00000 arcsec

Desired sensitivity per pointing 5.00000 mJy equivalent to 79.899 mK @ 0.800 " and 0.20454 K @ 0.500 "

Bandwidth used for Sensitivity **RepresentativeWindowResolution** Frequency Width 0.282227 MHz

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

Science Goal time estimate (includes configuration and beam information) ☐ Yes ☒ No

Simultaneous 12-m and ACA observations ☐ Yes ☒ No

Are the observations time-constrained? ☐ Yes ☒ No

Time Estimate

Note: The time in brackets is that required to reach the sensitivity. Operational requirements often mean that the actual observed time is longer, especially for mosaics. Please see the User Manual for more details.

Input Parameters

Requested sensitivity 5.000 mJy

Bandwidth used for sensitivity 0.282 MHz

Representative frequency (sky, first source) 345.766 GHz

Estimated Total time for Science Goal 1.71 h

Cluster 1

Source Name	RA	Dec	Velocity
HOPS 370	05:35:27.6220	-05:09:33.778	8.000 km/s

Possible Configuration Combinations

12-m (1)	12-m (2)	7-m	TP	Nominal Beam(*)	Max expected axial ratio
C43-2	None	No	No	0.648 x 0.719	1.5

Input Parameters

Precipitable water vapour (all sources) 1.262mm (4th Octile)

Time required for 12m (1) [C43-2]

Time on source per pointing (first source) 52.41 min [51.75 min]

Total number of pointings (all sources) 1

Number of tunings 1

Total time on source 52.41 min [51.75 min]

Total calibration time 44.07 min

Other overheads 5.93 min

Total time for 1 SB execution 51.21 min

Number of SB executions 2

Total time to complete SB 1.71 h

Calibration Breakdown per SB execution

2 x Pointing 4.00 min

1 x Amplitude/bandpass 10.00 min

4 x Phase 2.00 min

5 x Atmospheric 3.33 min

Calibration overheads 2.70 min

Estimated total time for cluster 1 1.71 h

Close

Example 2: Line observations of single target

The screenshot displays the ALMA Observing Tool (Validation OT) - Example 2 interface. On the left, the Project Structure pane shows a tree view with 'Example 2' expanded, containing 'Planned Observing' and 'ScienceGoal (Science Goal 1)'. Under 'ScienceGoal (Science Goal 1)', there are sub-items: 'General', 'Field Setup', 'Spectral Setup', 'Calibration Setup', 'Control and Performance', and 'Technical Justification'. A red arrow points to 'Technical Justification'. The main Editors pane on the right has three tabs: 'Spectral', 'Spatial', and 'Technical Justification'. The 'Technical Justification' tab is active, showing three sections: 'Sensitivity', 'Imaging', and 'Correlator configuration'. Each section has a header, a table of parameters, and a text area for justification. The 'Sensitivity' section includes parameters like 'Requested RMS over 244.701 m/s is 5.00 mJy' and 'Achieved RMS over the total 2.227 GHz bandwidth is 55.93 uJy, 0.89 mK/2.29 mK'. The 'Imaging' section includes 'Requested angular resolution 800.00 mas - 500.00 mas' and 'Requested Largest Angular Scale 5.00 arcsec'. The 'Correlator configuration' section includes 'line width / representative spectral window resolution: 10.00 km/s / 244.69 m/s = 40.87' and 'Representative spectral window width: 101.61 km/s'. Red rectangles highlight the parameter tables in each section.

Example 2: Line observations of single target

[illegible]

Lets propose!

(Phase 1)

Example 3: Mosaic observations (e.g. mapping a star-forming filament)

- 1 Science Goal with 1 mosaic target

To do:

- 1) Open template created before
- 2) Add Science Goal
- 3) Fill in General field
- 4) Save it as Example 3

Example 3: Mosaic observations

ALMA Observing Tool (Validation OT) - Example 3

File Edit View Tool Search Help

Project Structure

- Proposal
- Unsubmitted Proposal
- Example 3
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Field Setup

Spatial Image

Image Filename sky3/cache/sky11132322524105307378.fits

FOV Parameters

Representative Frequency (Sky) 333.000 GHz

Antenna Diameter 12m

Antenna Beamsize (HPBW) 17.486 arcsec

Show Antenna Beamsize

Image Query

Image Server Digitized Sky (Version II) at ESO

Image Size(arcmin) 10.0

Query

HOPS 370

Source

Source Name HOPS 370

Choose a Solar System Object? ☐ Name of object Unspecified

System ICRS

Source Coordinates

RA 05:35:27.6220

Dec -05:09:33.778

Resolved by simbad.u-strasbg.fr (SIMBAD)

Source Radial Velocity 0.000 km/s

Target Type

☐ Individual Pointing ☒ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam 30.0 mJy

Continuum Linear Polarization 0.0 per cent

Continuum Circular Polarization 0.0 per cent

Peak Line Flux Density per Synthesized Beam 0.00000 mJy

Line Width 0.00000 km/s

Line Linear Polarization 0.0 per cent

Line Circular Polarization 0.0 per cent

Rectangle

Coords Type ☒ Relative ☐ Absolute

Field Center

Offset(Longitude) 0.00000 arcsec

Offset(Latitude) 0.00000 arcsec

p length 0.00000 arcsec

q length 0.00000 arcsec

Position Angle 0.00000 deg

Spacing 0.51093 fraction of antenna beamsize

#Pointings 12m Array 0

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

Feedback

Validation Validation History Log

Description

Suggestion

Example 3: Mosaic observations

Option A

Select for Mosaic

Mosaic geometry

Up to 150 pointings

The screenshot shows the ALMA Observing Tool (Validation OT) - Example 3 interface. The interface is divided into several panels:

- Project Structure:** A tree view on the left showing the proposal structure. A red arrow points to the 'Field Setup' option under 'Planned Observing'.
- Spatial Image:** A central panel showing a radio image of a galaxy. A green rectangle is drawn on the image, indicating the region of interest. Below the image, the 'FOV Parameters' are listed: Representative Frequency (Sky) 104.500 GHz, Antenna Diameter 12m, Antenna Beamsize (HPBW) 55.722 arcsec, and Show Antenna Beamsize checked.
- HOPS_370 Source Configuration:** A panel on the right showing the configuration for the source HOPS_370. The 'Target Type' is set to 'Individual Pointing' (radio button selected). The 'Rectangular' section is highlighted with a red box, showing the 'Mosaic geometry' parameters: Coords Type (Relative), Field Center Coordinates (Offset(Longitude) 0.00000 arcsec, Offset(Latitude) 0.00000 arcsec), p length (0.5 arcmin), q length (5.0 arcmin), Position Angle (10.0 deg), Spacing (0.51093 fraction of antenna beamsize), and #Pointings (12m Array: 21). A red circle highlights the '1 Rectangular Field' option in the 'Target Type' section.
- Feedback:** A panel at the bottom with a table for validation. The table has columns for 'Description' and 'Suggestion'. An arrow points to the 'Export to File...' button in the 'HOPS_370' panel, with the text 'Up to 150 pointings' below it.

Example 3: Mosaic observations

ALMA Observing Tool (Validation OT) - Example 3

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
 - Example 3
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Field Setup

Spatial Image

FOV Parameters

- Representative Frequency (Sky) 104.500 GHz
- Antenna Diameter 12m
- Antenna Beamsize (HPBW) 55.722 arcsec
- Show Antenna Beamsize ☒

Image Query

- Image Server Digitized Sky (Version II) at ESO
- Image Size(arcmin) 10.0
- Query

HOPS_370

Source

Source Name HOPS_370

Choose a Solar System Object? ☐ Name of object Unspecified

System ICRS Sexagesimal display? ☒

Source Coordinates

- RA 05:35:27.6220
- Dec -05:09:33.778
- Parallax 0.00000 mas
- PM RA 0.00000 mas/yr
- PM DEC 0.00000 mas/yr

Source Radial Velocity 0.000 km/s

Target Type ☐ Individual Pointing ☒ 1 Rectangular Field

Expected Source Properties

- Peak Continuum Flux Density per Synthesized Beam 30.00000 mJy
- Continuum Linear Polarization 0.0 per cent
- Continuum Circular Polarization 0.0 per cent
- Peak Line Flux Density per Synthesized Beam 0.00000 mJy
- Line Width 0.00000 km/s
- Line Linear Polarization 0.0 per cent
- Line Circular Polarization 0.0 per cent

Rectangle

Coords Type ☒ Relative ☐ Absolute

Field Center Coordinates

- Offset(Longitude) 0.00000 arcsec
- Offset(Latitude) 0.00000 arcsec

p length 0.5 arcmin

q length 5.0 arcmin

Position Angle 10.0 deg

Spacing 0.51093 fraction of antenna beamsize

#Pointings 12m Array 21

Export to File...

Up to 150 pointings

Feedback

Validation Validation History Log

Description	Suggestion
-------------	------------

Example 3: Mosaic observations

ALMA Observing Tool (Validation OT) - Example 3

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
 - Example 3
 - Proposal
 - Planned Observing (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Field Setup

Spatial Image

FOV Parameters

- Representative Frequency (Sky) 104.500 GHz
- Antenna Diameter 12m
- Antenna Beamsize (HPBW) 55.722 arcsec
- Show Antenna Beamsize

Image Query

Image Server Digitized Sky (Version II) at ESO

Image Size(arcmin) 10.0

Query

Source

Source Name HOPS_370

Choose a Solar System Object? ☐ Name of object Unspecified

System ICRS Sexagesimal display? ☒

Source Coordinates

RA 05:35:27.6220 PM RA 0.00000 mas/yr

Dec -05:09:33.778 PM DEC 0.00000 mas/yr

Source Radial Velocity 0.000 km/s lsrk z 0.000000000 Doppler Type RADIO

Target Type ☐ Individual Pointing ☒ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam 30.00000 mJy

Continuum Linear Polarization 0.0 per cent

Continuum Circular Polarization 0.0 per cent

Peak Line Flux Density per Synthesized Beam 0.00000 mJy

Line Width 0.00000 km/s

Line Linear Polarization 0.0 per cent

Line Circular Polarization 0.0 per cent

Rectangle

Coords Type ☒ Relative ☐ Absolute

Field Center Coordinates

Offset(Longitude) 0.00000 arcsec

Offset(Latitude) 0.00000 arcsec

p length 0.5 arcmin

q length 5.0 arcmin

Position Angle 10.0 deg

Spacing (0.51093 fraction of antenna beamsize) Reset to Nyquist

#Pointings 12m Array 21

Load from File... Export to File... Clone Source Delete Source Delete All Sources

Mosaic geometry

Option A

Explore the different options

Up to 150 pointings

To see the pointings

Select for Mosaic

Example 3: Mosaic observations

Option B

Primary beam (red)
Imaged area (green)
(we haven't set the spectral setup yet)

Add pointings manually

ALMA Observing Tool (Validation OT) - Example 3

File Edit View Tool Search Help

Project Structure

Unsubmitted Proposal

Example 3

Planned Observing

ScienceGoal (Science Goal 1)

General

Field Setup

Spectral Setup

Calibration Setup

Control and Performance

Technical Justification

Editors

Spectral Spatial Field Setup

Spatial Image

HOPS_370

Source

Source Name HOPS_370

Choose a Solar System Object? ☐ Name of object Unspecified

System ICRS

RA 05:35:27.6220

Dec -05:09:33.778

Source Radial Velocity 0.000 km/s

Target Type Individual Pointing(s)

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam 30.00000 mJy

Continuum Linear Polarization 0.0 per cent

Continuum Circular Polarization 0.0 per cent

Peak Line Flux Density per Synthesized Beam 0.00000 mJy

Line Width 0.00000 km/s

Line Linear Polarization 0.0 per cent

Line Circular Polarization 0.0 per cent

Field Center Coordinates

Coord Type Relative Absolute

Offset Unit arcmin

#Pointings 5

RA [arcmin]	Dec [arcmin]
0.00000	0.00000
0.50000	0.00000
0.00000	0.50000
0.00000	-0.50000
-0.50000	0.00000

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

Example 3: Mosaic observations

Option B

Primary beam (red)
Imaged area (green)
(we haven't set the spectral setup yet)

Explore the different options

Add pointings manually

Project Structure

- Unsubmitted Proposal
- Example 3
 - Proposal
 - Planned Observing (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Field Setup

Spatial Image

HOPS_370

Source

Source Name: HOPS_370

Choose a Solar System Object? ☐ Name of object: Unspecified

System: ICRS Sexagesimal display? ☐ Parallax: 0.00000 mas

Source Coordinates: RA: 05:35:27.6220 PM RA: 0.00000 mas/yr

Dec: -05:09:33.778 PM DEC: 0.00000 mas/yr

Source Radial Velocity: 0.000 km/s Isrk z: 0.000000000 Doppler Type: RADIO

Target Type: ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam: 30.00000 mJy

Continuum Linear Polarization: 0.0 per cent

Continuum Circular Polarization: 0.0 per cent

Peak Line Flux Density per Synthesized Beam: 0.00000 mJy

Line Width: 0.00000 km/s

Line Linear Polarization: 0.0 per cent

Line Circular Polarization: 0.0 per cent

Field Center Coordinates

Coord Type: ☒ Relative ☐ Absolute

Offset Unit: arcmin

#Pointings: 5

RA [arcmin]	Dec [arcmin]
0.00000	0.00000
0.50000	0.00000
0.00000	0.50000
0.00000	-0.50000
-0.50000	0.00000

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

Example 3: Mosaic observations

ALMA Observing Tool (Validation OT) - Example 3

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
 - Example 3
 - Proposal
 - Planned Observing
 - ScienceGoal (Science Goal 1)
 - General
 - Field Setup
 - Spectral Setup**
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Spectral Setup

Left/right click to zoom in/out, grab sliding bar to pan
Note: Moving LO1 here is for experimentation only - actual setup determined by the windows

Observed Frequency (GHz)

Rest Frequency (GHz)

Overlays: ☒ Receiver Bands ☒ Transmission ☒ OSB Image ☐ Spectral Lines

Water Vapour Column Density: ☒ Automatic Choice ☐ Manual Choice [5.186mm (7th Octile)]

Viewport:

Spectral Type

Spectral Type

- ☐ Spectral Line
- ☒ Single Continuum
- ☐ Spectral Scan

Produce image sidebands (Bands 9 and 10 only) ☐

Polarization products desired ☐ XX ☒ DUAL ☐ FULL

Spectral Setup Errors

Single Continuum

Receiver Band: 3 [84.0-116.0 GHz]

Sky Frequency: 97.50000 GHz

Rest Frequency: 97.500000 GHz

☒ Low spectral resolution (TDM)
☐ High spectral resolution (FDM)

Baseband-1	Fraction	Centre Freq (rest.topol)	Centre Freq (sky.topol)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)		90.50000 GHz	90.50000 GHz	Single Continuum	1875.000 MHz(6211 km/s), 31.250 MHz(103.519 km/s)	1	

☐ Show image spectral windows

Baseband-2	Fraction	Centre Freq (rest.topol)	Centre Freq (sky.topol)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)		92.50000 GHz	92.50000 GHz	Single Continuum	1875.000 MHz(6077 km/s), 31.250 MHz(101.281 km/s)	1	

☐ Show image spectral windows

Baseband-3	Fraction	Centre Freq (rest.topol)	Centre Freq (sky.topol)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)		102.50000 GHz	102.50000 GHz	Single Continuum	1875.000 MHz(5484 km/s), 31.250 MHz(91.400 km/s)	1	

☐ Show image spectral windows

Baseband-4	Fraction	Centre Freq (rest.topol)	Centre Freq (sky.topol)	Transition	Bandwidth, Resolution (smoothed)	Spec. Avg.	Representative Window
1(Full)		104.50000 GHz	104.50000 GHz	Single Continuum	1875.000 MHz(5379 km/s), 31.250 MHz(89.651 km/s)	1	

Example 3: Mosaic observations

ALMA Observing Tool (Validation OT) - Example 3

File Edit View Tool Search Help

Project Structure

- Unsubmitted Proposal
- Example 3
 - Proposal
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 - General
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 - Spectral Setup
 - Calibration Setup
 - Control and Performance
 - Technical Justification

Editors

Spectral Spatial Field Setup

Primary beam (red)
Imaged area (green)
at Band 3

Spatial Image

HOPS_370

Source

Source Name HOPS_370

Choose a Solar System Object? ☐ Name of object Unspecified

System ICRS Sexagesimal display? ☐ Parallax 0.00000 mas

Source Coordinates RA 05:35:27.6220 PM RA 0.00000 mas/yr

Dec -05:09:33.778 PM DEC 0.00000 mas/yr

Source Radial Velocity 0.000 km/s z 0.000000000 Doppler Type RADIO

Target Type ☒ Individual Pointing(s) ☐ 1 Rectangular Field

Expected Source Properties

Peak Continuum Flux Density per Synthesized Beam 30.00000 mJy

Continuum Linear Polarization 0.0 per cent

Continuum Circular Polarization 0.0 per cent

Peak Line Flux Density per Synthesized Beam 0.00000 mJy

Line Width 0.00000 km/s

Line Linear Polarization 0.0 per cent

Line Circular Polarization 0.0 per cent

Field Center Coordinates

Coord Type ☒ Relative ☐ Absolute

Offset Unit arcmin

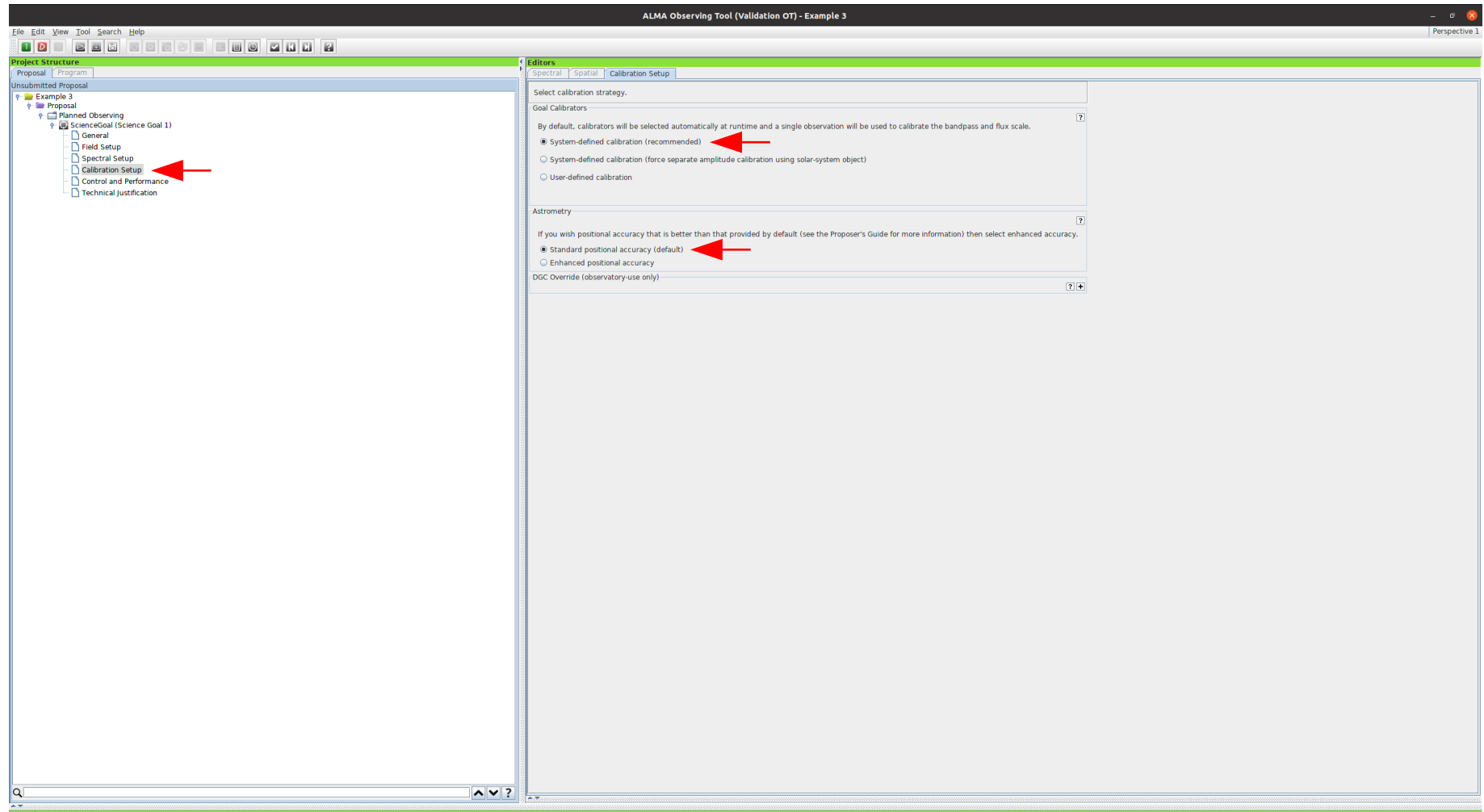
#Pointings 5

RA [arcmin]	Dec [arcmin]
0.00000	0.00000
0.50000	0.00000
0.00000	0.50000
0.00000	-0.50000
-0.50000	0.00000

Add Source Load from File... Export to File... Clone Source Delete Source Delete All Sources

Option B

Example 3: Mosaic observations



Example 3: Mosaic observations

Option A:
rectangular
mosaic
(21 pointings)

Control and Performance

Configuration Information

Antenna Beamsize ($1.13 \times \lambda / D$) 12m 55.722 arcsec 7m 95.523 arcsec

Number of Antennas 12m 43 7m 10 TP 3

Longest baseline 0.049 km 0.161 km 8.548 km

Synthesized beamsize 12.233 arcsec 3.315 arcsec 0.096 arcsec

Shortest baseline 0.009 km 0.015 km 0.113 km

Maximum recoverable scale 64.416 arcsec 28.136 arcsec 1.390 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam) ☐ Single ☒ Range ☐ Any ☐ Standalone ACA

0.50000 arcsec to 0.80000 arcsec

Largest Angular Structure in source 5.00000 arcsec

Desired mosaic sensitivity 30.00000 uJy equivalent to 5.2484 mK @ 0.800 " and 0.013436 K @ 0.500 "

Bandwidth used for Sensitivity AggregateBandWidth Frequency Width 7.500000 GHz

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

Science Goal time estimate (includes configuration and beam information)

Simultaneous 12-m and ACA observations ☐ Yes ☒ No

Are the observations time-constrained? ☐ Yes ☒ No

Time Estimate

Note: The time in brackets is that required to reach the sensitivity. Operational requirements often mean that the actual observed time is longer, especially for mosaics. Please see the User Manual for more details.

Input Parameters

Requested sensitivity 0.03000 mJy

Bandwidth used for sensitivity 7.500 GHz

Representative frequency (sky, first source) 104.500 GHz

Estimated Total time for Science Goal 2.45 h

Cluster 1

Source Name	RA	Dec	Velocity
HOPS_370	05:35:27.6220	-05:09:33.778	0.000 km/s

Possible Configuration Combinations

12-m (1)	12-m (2)	7-m	TP	Nominal Beam(*)	Max expected axial ratio
C43-5	None	No	No	0.524 x 0.558	1.5

Input Parameters

Precipitable water vapour (all sources) 5.186mm (7th Octile)

Time required for 12m (1) [C43-5]

Time on source per pointing (first source)	4.37 min [4.25 min]
Total number of pointings (all sources)	21
Number of tunings	1
Total time on source	1.53 h [1.49 h]
Total calibration time	46.60 min
Other overheads	8.58 min
Total time for 1 SB execution	1.22 h
Number of SB executions	2
Total time to complete SB	2.45 h

Calibration Breakdown per SB execution

2 x Pointing	4.00 min
1 x Amplitude/bandpass	5.00 min
10 x Phase	5.00 min
6 x Atmospheric	4.00 min
Calibration overheads	5.30 min

Estimated total time for cluster 1 2.45 h

Close

Example 3: Mosaic observations

Option B:
5x pointings

Control and Performance

Configuration Information

Parameter	12m	7m	TP
Antenna Beamsize (1.13 * λ / D)	55.722 arcsec	95.523 arcsec	
Number of Antennas	43	10	3
Longest baseline	0.049 km	0.161 km	8.548 km
Synthesized beamsize	12.233 arcsec	3.315 arcsec	0.096 arcsec
Shortest baseline	0.009 km	0.015 km	0.113 km
Maximum recoverable scale	64.416 arcsec	28.136 arcsec	1.390 arcsec

Desired Performance

Desired Angular Resolution (Synthesized Beam) ☐ Single ☒ Range ☐ Any ☐ Standalone ACA

0.50000 arcsec to 0.80000 arcsec

Largest Angular Structure in source 5.00000 arcsec

Desired sensitivity per pointing 30.00000 uJy equivalent to 5.2484 mK @ 0.800 " and 0.013436 K @ 0.500 "

Bandwidth used for Sensitivity AggregateBandWidth Frequency Width 7.500000 GHz

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

Science Goal time estimate (includes configuration and beam information) ☐ Yes ☒ No

Simultaneous 12-m and ACA observations ☐ Yes ☒ No

Are the observations time-constrained? ☐ Yes ☒ No

Time Estimate

Note: The time in brackets is that required to reach the sensitivity. Operational requirements often mean that the actual observed time is longer, especially for mosaics. Please see the User Manual for more details.

Input Parameters

Parameter	Value
Requested sensitivity	0.03000 mJy
Bandwidth used for sensitivity	7.500 GHz
Representative frequency (sky, first source)	104.500 GHz

Estimated Total time for Science Goal 1.15 h

Cluster 1

Source Name	RA	Dec	Velocity
HOPS_370	05:35:27.6220	-05:09:33.7778	0.000 km/s

Possible Configuration Combinations

12-m (1)	12-m (2)	7-m	TP	Nominal Beam(*)	Max expected axial ratio
C43-5	None	No	No	0.524 x 0.558	1.5

Input Parameters

Parameter	Value
Precipitable water vapour (all sources)	5.186mm (7th Octile)

Time required for 12m (1) [C43-5]

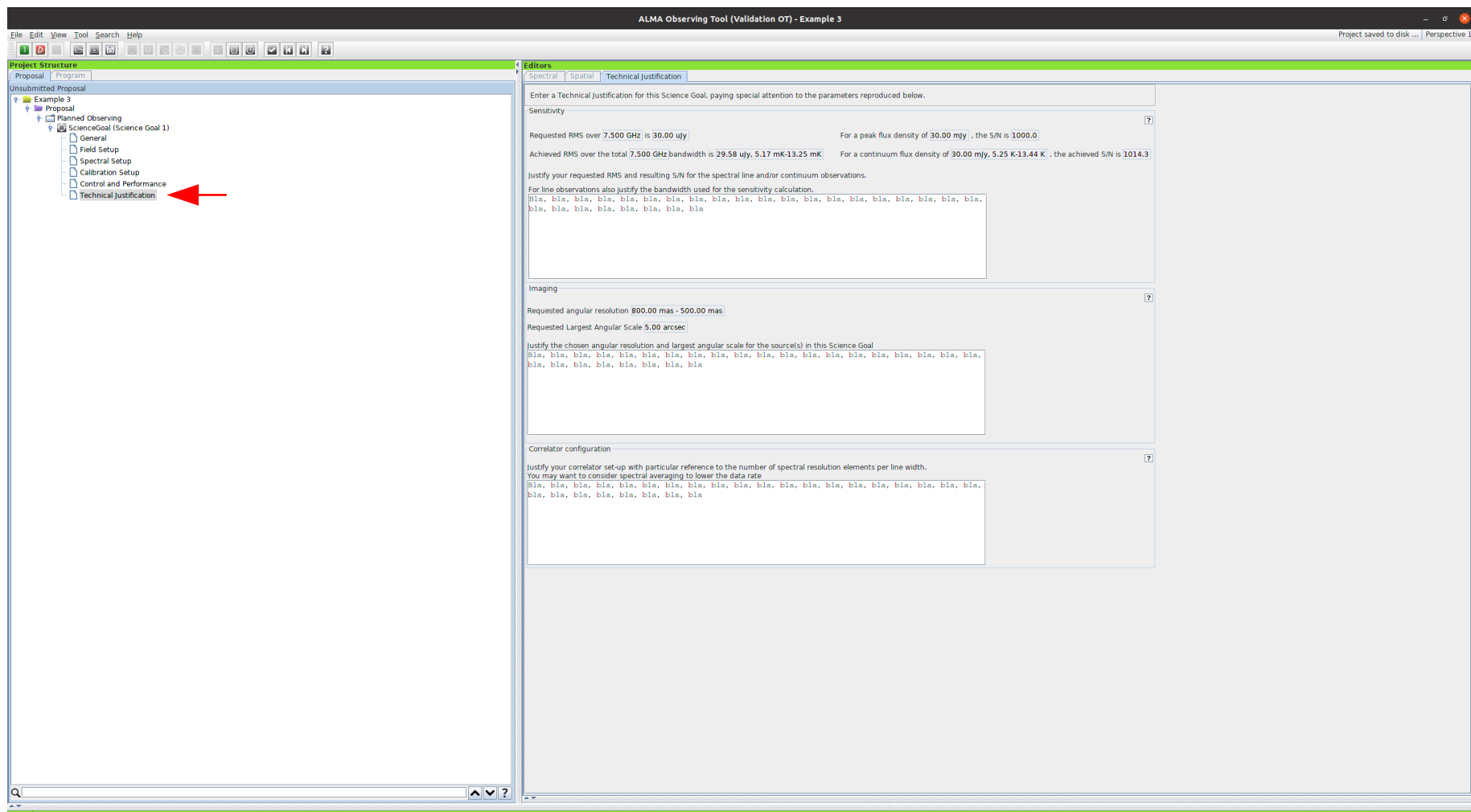
Parameter	Value
Time on source per pointing (first source)	8.57 min [8.38 min]
Total number of pointings (all sources)	5
Number of tunings	1
Total time on source	42.84 min [41.88 min]
Total calibration time	22.37 min
Other overheads	3.79 min
Total time for 1 SB execution	1.15 h
Number of SB executions	1
Total time to complete SB	1.15 h

Calibration Breakdown per SB execution

Parameter	Value
2 x Pointing	4.00 min
1 x Amplitude/bandpass	5.00 min
9 x Phase	4.50 min
6 x Atmospheric	4.00 min
Calibration overheads	4.87 min

Estimated total time for cluster 1 1.15 h

Example 3: Mosaic observations



[illegible]

Check Point!

Save your project now (aot file)

Congratulations!

Example 1: Continuum observations of several targets
(e.g. survey of protostars)

Example 2: Line observations of single target (e.g. study
kinematics of a protostellar disk)

Example 3: Mosaic observations (e.g. mapping a star-
forming filament)

Final Recommendations

(thanks George, Adam & Anita!)

- Make sure all Co-Is have registered for an account with ALMA (or ESO) so that they can be listed on the proposal.
- Check the source coordinates, velocities and/or redshifts, and spectral settings before proposal submission. These can be updated later, but if more changes need to be made, more errors can be introduced.
- Use at least four spectral windows. Any spectral window not covering a line of scientific interest can be used for serendipitous continuum and spectral line detection.
- Use 1920 channels per baseband. The extra channels provide extra spectral resolution if needed, and if the higher resolution is not needed, the channels can be averaged together after observing to improve sensitivity.
- Do not use 3840 channels per spectral window. The effective spectral resolution will still be equivalent to 1920 channels.
- Do not place important spectral lines near the edges of spectral windows where the sensitivity of the detectors decreases.

- Do not try to gain sensitivity by overlapping the spectral windows. The instrument doesn't work that way.
- Do not change anything under Calibration Setup unless you know what you are doing.
- Do not specify a single angular resolution unless you absolutely need to. A program that specifies a range is more likely to be observed.
- Use "Any" for the desired angular resolution if you only need to detect the source.
- Do not forget to account for extended source emission in terms of uv coverage.
- Do not forget to account for extent of the source emission when estimating the peak surface brightness.