

Introduction to the ALMA Archive

Ji-hyun Kang (KASI)

~20 Science Verification Data,
~400 Realised Archive Data (~1400 sources),
7000 Calibrator Data Sets

- 1) ALMA Archive & Usages
- 2) Quick Look of Science-Ready ALMA Images (JVO)
<http://alma.kasi.re.kr/> -> ALMA archive handbook

<https://almascience.nao.ac.jp>



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



Search Site



ESO

NRAO

NAOJ

[Log in](#) | [Register](#) | [Reset Password](#) | [Forgot Account](#)

[About](#)

[Science](#)

[Proposing](#)

[Observing](#)

[Data](#)

[Archive](#)

[Calibrator Catalogue](#)

[Science Verification](#)

[Data Processing](#)

[Documents & Tools](#)

[Knowledgebase/FAQ](#)

**User Services at
ARCs**

- [Helpdesk](#)
- [ALMA Calendars](#)
- [EU ARC](#)
- [NA ARC](#)

You are here: [Home](#) / [Data](#)

ALMA Data

The ALMA Science Archive

The [ALMA Science Archive](#) holds all public and proprietary science data. The Archive provides a form-based query tool to the data and allows for anonymous or authenticated download.

The ALMA Calibrator Source Catalogue

A web-based user interface to the calibrator database is provided through the [Calibrator Catalogue link](#) in the left side-bar. The data comprise ALMA calibrator measurements of the flux density for sources drawn from seed catalogues such as ATCA, SMA and VLA, and use updated coordinates from VLBI (ICRS). Details on the Calibrator Source Catalogue can be found in Fomalont, E., et al., 2014, "The Calibration of ALMA using Radio Sources", *The Messenger*, 155, 19", and the ALMA Technical Handbook also describes principles of the calibrator selection during observation.

Science Verification Data

In addition to the archive, there are several datasets available as Science Verification data. These observations are performed in order to demonstrate the early capabilities of ALMA. Access to the data sets are through the link Science Verification in the left side-bar. Information about planned Science Verification observations are also presented. Publications making use of ALMA Science Verification data must include a statement in the acknowledgement that is similar to the one for regular data (see below). The Science Verification acknowledgement can be found under [the Science Verification link in the left side-bar](#).

Using ALMA data for publication

Publications making use of ALMA data must include the following statement in the acknowledgement:

"This paper makes use of the following ALMA data: ADS/JAO.ALMA#2011.0.01234.S . ALMA is a partnership of ESO (representing its member states), NSF (USA) and NINS (Japan), together with NRC (Canada), NSC and ASIAA (Taiwan), and KASI (Republic of Korea), in cooperation with the Republic of Chile. The Joint ALMA Observatory is operated by ESO, AUI/NRAO and NAOJ."



Atacama Large Millimeter/submillimeter Array

In search of our Cosmic Origins



Search Site 

ESO

NRAO

NAOJ

[Log in](#) | [Register](#) | [Reset Password](#) | [Forgot Account](#)

[About](#)

[Science](#)

[Proposing](#)

[Observing](#)

[Data](#)

[Archive](#)

[Calibrator Catalogue](#)

[Science Verification](#)

[Data Processing](#)

[Documents & Tools](#)

[Knowledgebase/FAQ](#)

User Services at ARCs

- [Helpdesk](#)
- [ALMA Calendars](#)
- [EU ARC](#)
- [NA ARC](#)

You are here: [Home](#) / [Data](#) / [Archive](#)

Archive

[Archive Query](#)

Documentation

We provide a comprehensive [ALMA Science Archive Manual](#).

Data delegation

PIs can grant access to one of their projects to a registered ALMA user by logging into the Science Portal, going to the user profile page in the top right corner and then adding delegees in the "Project delegation" tab.

Cycle 0 content

Please [go here](#) to see the content of the Cycle 0 deliveries.

ALMA Science Archive Query

Query Form

Results Table

Search

Reset

Query Help

| | | | |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>Position</div> <div>Source name (Resolver) Source name (ALMA) RA Dec Spatial resolution Largest angular scale</div> | <div>Energy</div> <div>Frequency Bandwidth Spectral resolution Band</div> | <div>Time</div> <div>Observation date Integration time</div> | <div>Polarisation</div> <div>Polarisation type</div> |
| <div>Observation</div> <div>Water vapour</div> | <div>Project</div> <div>Project code Project title PI name Project abstract</div> | | <div>Options</div> <div>View: <input checked="" type="radio"/> raw data <input type="radio"/> project <input type="checkbox"/> public data only <input checked="" type="checkbox"/> science observations only</div> |



About

Science

Proposing

Observing

Data

Archive

Calibrator Catalogue

Science Verification

Data Processing

Documents & Tools

Knowledgebase/FAQ

User Services at ARCs

- Helpdesk
- ALMA Calendars
- EU ARC
- NA ARC

You are here: [Home](#) / [Data](#) / [Archive](#) / [Delivery List](#)

Delivery List

Note: Please see the knowledgebase article "[Will re-reduction improve the Cycle 0 data products provided by the archive?](#)" for a discussion of the changes to CASA since Cycle 0 data processing was performed, and their possible impact on the data products.

The link on the project codes lead to the abstracts and author lists, the links on the content link to an index of the tarfiles. This index shows the main directories contained in each tar file as well as the location of the README and fits files.

Release dates starting with 2099 indicate datasets that were delivered but afterwards problems were discovered that render the data unuseable (QA3). Those datasets are still under investigation.

[Request Marked Deliveries](#) [Reset](#)

| | Project | Delivery | Release Date | PI Name | Project Title | Contents |
|--------------------------|--------------------------------|---------------------------|---------------------|--------------------|-------------------------------------------------------------------------------------------|-------------------------|
| <input type="checkbox"/> | 2011.0.00101.S | 2011.0.00101.S_2011-12-06 | 2012-12-06 04:27:58 | Wang, Wei-Hao | Shedding Light on Distant Starburst Galaxies Hosting Gamma-ray Bursts v9 | content |
| <input type="checkbox"/> | 2011.0.00131.S | 2011.0.00131.S_2011-12-06 | 2012-12-06 16:08:24 | Maercker, Matthias | Piecing the shell together: ALMA and the detached shell around R Scl | content |
| <input type="checkbox"/> | 2011.0.00191.S | 2011.0.00191.S_2011-12-06 | 2012-12-06 20:39:39 | Boley, Aaron | Constraining the Formation Mechanisms of Wide-Orbit Planets: The Case of Fomalhaut b v0.6 | content |
| <input type="checkbox"/> | 2011.0.00397.S | 2011.0.00397.S_2011- | 2012-12- | Lonsdale, | The most luminous heavily obscured, | content |

| PI | Exec | Country | Institute |
|-----------------|-------|---------------|------------------------|
| Wang, Wei-Hao | EA/NA | Taiwan | Academia Sinica |
| COI | | | |
| Chen, Hsiao-Wen | NA | United States | Chicago, University of |
| Huang, Iijin | EA/NA | Taiwan | Academia Sinica |

Title

Shedding Light on Distant Starburst Galaxies Hosting Gamma-ray Bursts

Abstract

Studies of distant starburst galaxies hosting gamma-ray bursts (GRBs) offer unique insights into extreme star-forming regions during early epochs. We propose to carry out a pilot program to observe the 345 GHz continuum from the host galaxies of GRB021004 and GRB080607 at $z > 2$ with ALMA. The selected targets show contrast examples in the host galaxy population in the observed neutral gas surface mass density in front of the GRB birth site. The host galaxy

Page 9

of GRB080607 exhibits a large gas surface mass density of $\sim 400 \text{ M}_{\odot} \text{ pc}^{-2}$, including a large molecular gas column density in the afterglow spectrum. In contrast, the host galaxy of GRB021004 exhibits ionized ISM and complex velocity field in the afterglow spectrum. Both hosts have been identified with associated stellar light in late-time HST images and have constraints for the ISM metallicity from afterglow absorption-line measurements. In addition, the early-

| | |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 2011.0.00101.S_2011-12-06_001_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/README |
| 2011.0.00101.S_2011-12-06_001_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/calibrated/uid___A002_X2f146f_X6f.ms.split |
| 2011.0.00101.S_2011-12-06_001_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/calibrated/uid___A002_X30a93d_X43e.ms.split |
| 2011.0.00101.S_2011-12-06_001_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/calibration/ |
| 2011.0.00101.S_2011-12-06_001_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/qa/ |
| 2011.0.00101.S_2011-12-06_001_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/raw/uid___A002_X2f146f_X6f.ms.split |
| 2011.0.00101.S_2011-12-06_001_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/raw/uid___A002_X30a93d_X43e.ms.split |
| 2011.0.00101.S_2011-12-06_001_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/science/GRB021004_b7_cont_clean.fits |
| 2011.0.00101.S_2011-12-06_001_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/script/ |
| 2011.0.00101.S_2011-12-06_002_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/calibrated/uid___A002_X30a93d_X43e.ms.split |
| 2011.0.00101.S_2011-12-06_002_of_002.tar | 2011.0.00101.S/sg_ouss_id/group_ouss_id/member_ouss_2011-12-06_id/log/ |
| | |

ALMA Science Archive Query

Query Form

Results Table

Search

Reset

Query Help

| | | | |
|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>Position</div> <div>Source name (Resolver) Source name (ALMA) RA Dec Spatial resolution</div> | <div>Energy</div> <div>Frequency Bandwidth Spectral resolution Band</div> | <div>Time</div> <div>Observation date Integration time</div> | <div>Polarisation</div> <div>Polarisation type</div> |
| <div>Observation</div> <div>Water vapour</div> | <div>Project</div> <div>Project code Project title PI name</div> | | <div>Options</div> <div>View: <input checked="" type="radio"/> raw data <input type="radio"/> project <input type="checkbox"/> public data only <input checked="" type="checkbox"/> science observations only</div> |

ALMA Science Archive Query

Query Form

Results Table

Search

Reset

[Query Help](#)

Position

Source name (Resolver)

Source name (ALMA)

RA Dec

Spatial resolution

Observation

Water vapour

Energy

Source name (Resolver)

Case-insensitive search for source name, to be resolved with Sesame. Wildcard matching is disabled. A search radius in degrees can be added to the end separated by a comma.

Usage.

Use Sesame (via. NED, Simbad and VizieR) to parse names commonly found throughout literature. A green tick indicates a successful search, otherwise, a red cross is returned.

Example

[Cen A](#)

[NGC3375](#)

[ARP220, 20](#)

Time

Observation date

Integration time

Polarisation

Polarisation type

Options

View: ☒ raw data ☐ project

☐ public data only

☒ science observations only

ALMA Science Archive Query

Query Form


Results Table

Search

Reset

[Query Help](#)

Position

Source name (Resolver)
 

Source name (ALMA)

RA Dec

Spatial resolution

Largest angular scale

Observation

Water vapour

Energy

Frequency

Bandwidth

Spectral resolution

Band

Project

Project code

Project title

PI name

Project abstract

Time

Observation date

Frequency
Reference sky frequency.

Description
Observed (tuned) reference frequency on the sky.

Unit
GHz

Example
>100
<300
100 .. 300
!(100 .. 300)
100 .. 300 | 600 .. 900

Polarisation

Polarisation type

Options

View: ☒ raw data ☐ project

☐ public data only

☒ science observations only

ALMA Science Archive Query

Query Form

Results Table

Search

Reset

Query Help

Position

Source name (Resolver)
Source name (ALMA)

grb02*

GRB020819

GRB021004

GRB020819

GRB021004

GRB050401

GRB051022

GRB080607

Energy

Frequency
Bandwidth

Source name (ALMA)
ALMA source name.

Description
Name of the source as registered in the ASDM. Partial matches through wildcards (? , *), and boolean OR expressions ("|"), can be used.

Example
GRB021004
"R Scl"

Project abstract

Time

Observation date
Integration time

Polarisation

Polarisation type

Options

View: ☒ raw data ☐ project
☐ public data only
☒ science observations only

ALMA Science Archive Query

Query Form

Results Table

Search

Reset

Query Help

Position

Source name (Resolver)
Source name (ALMA)
RA Dec

Spatial resolution
Largest angular scale

Energy

Frequency
Bandwidth
Spectral resolution

Time

Observation date
Integration time

Polarisation

Polarisation type

Observation

Water vapour

Options

View: ☒ raw data ☐ project
☐ public data only
☒ science observations only

RA Dec
Right Ascension, Declination

Description
RA and Dec may be expressed in sexagesimal, with colon-separated hours:minutes:seconds degrees:minutes:seconds, or in decimal degrees. A range may also be specified using the operators listed under "Query Help". A search radius in degrees can be added to the end separated by a comma. The default search radius is 1 degree.

Unit
Hours:Minutes:Seconds and
Degrees:Minutes:Seconds

Example
12:13:14.0 -00:01:02.1
12:13:14.0 -00:01:02.1, 20
181.0192 -0.01928
181.0192 -0.01928, 30
181..185 >-0.1928
>12:13:14.0 0..40

ALMA Science Archive Query

Query Form Results Table

Search Reset

[Query Help](#)

Position

Source name (Resolver)
arp220, 20 ✓

Source name (ALMA)

RA Dec

Spatial resolution

Largest angular scale

Observation

Water vapour

Energy

Time

Polarisation

Polarisation type

Options

View: ☒ raw data ☐ project

☐ public data only

☒ science observations only

Source name (Resolver)
Case-insensitive search for source name, to be resolved with Sesame. Wildcard matching is disabled. Search is performed within a radius of 1 degree. A search radius in degrees can be added to the end separated by a comma.

Usage.
Use Sesame (via. NED, Simbad and Vizier) to parse names commonly found throughout literature. A green tick indicates a successful search, otherwise, a red cross is returned.

Example
[Cen A](#)
[NGC3375](#)
[ARP220, 20](#)

Source
IC 4553

Coordinates (RA Dec)
15:34:57.22 +23:30:11.6

Object type
SyG (Seyfert Galaxy)

Morphology Type
I

Resolver
Sesame using [Simbad](#)

ALMA Science Archive Query

Query Form Results Table

Submit download request

Results Bookmark Export Table Results Help

Showing 185 of 185 rows. [More columns](#)

| <input type="checkbox"/> | Project code | Source name | RA | Dec | Band | Integration | Release date | Velocity resolution | Frequency support |
|--------------------------|--------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------------------|-----------------------------------|
| Filter: | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text" value="m/s"/> | <input type="text"/> |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 7 | 2056.32 | 2013-12-07 | 27402.25 | 333.94..349.65GHz |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 7 | 2116.8 | 2013-12-07 | 27402.25 | 333.94..349.65GHz |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 7 | 2056.32 | 2013-12-07 | 27402.25 | 333.94..349.65GHz |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 7 | 2056.32 | 2013-12-07 | 27402.25 | 333.94..349.65GHz |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 9 | 2056.32 | 2013-12-17 | 13435.30 | 693.71..701.65GHz |
| <input type="checkbox"/> | 2011.0.00403.S | Arp 220 | 15:34:57.27 | +23:30:10.5 | 9 | 1149.12 | 2014-01-24 | 13777.71 | 675.75..683.64GHz |
| <input type="checkbox"/> | 2011.0.00403.S | Arp 220 | 15:34:57.27 | +23:30:10.5 | 9 | 1512 | 2014-01-24 | 13777.71 | 675.75..683.64GHz |
| <input type="checkbox"/> | 2012.1.00604.S | J1639+2824 | 16:39:09.11 | +28:24:47.2 | 7 | 302.4 | 2015-03-11 | 27233.13 | 336.03..352.03GHz |
| <input type="checkbox"/> | 2012.1.00604.S | J1604+1645 | 16:04:41.47 | +16:45:38.3 | 7 | 302.4 | 2015-03-11 | 27233.13 | 336.03..352.03GHz |
| <input type="checkbox"/> | 2012.1.00604.S | J1554+1937 | 15:54:26.16 | +19:37:03.1 | 7 | 302.4 | 2015-03-11 | 27233.13 | 336.03..352.03GHz |
| <input type="checkbox"/> | 2012.1.00604.S | J1513+0855 | 15:13:52.52 | +08:55:55.7 | 9 | 393.12 | 2015-04-08 | 14951.47 | 613.04..631.05GHz |

ALMA Science Archive Query

Query Form Results Table

Submit download request

[Results Bookmark](#) [Export Table](#) [Results Help](#)

Showing 50 of 50 rows. [More columns](#)

| <input type="checkbox"/> | Project code | Source name | RA | Dec | Band | Integration | Release date | Velocity resolution | Frequency support |
|--------------------------|--------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|--------------------------|-----------------------------------|
| Filter: | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> m/s | <input type="text"/> |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 7 | 2056.32 | 2013-12-07 | 27402.25 | 333.94..349.65GHz |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 7 | 2116.8 | 2013-12-07 | 27402.25 | 333.94..349.65GHz |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 7 | 2056.32 | 2013-12-07 | 27402.25 | 333.94..349.65GHz |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 7 | 2056.32 | 2013-12-07 | 27402.25 | 333.94..349.65GHz |
| <input type="checkbox"/> | 2011.0.00175.S | ARP220 | 15:34:57.10 | +23:30:11.0 | 9 | 2056.32 | 2013-12-17 | 13435.30 | 693.71..701.65GHz |
| <input type="checkbox"/> | 2011.0.00403.S | Arp 220 | 15:34:57.27 | +23:30:10.5 | 9 | 1149.12 | 2014-01-24 | 13777.71 | 675.75..683.64GHz |
| <input type="checkbox"/> | 2011.0.00403.S | Arp 220 | 15:34:57.27 | +23:30:10.5 | 9 | 1512 | 2014-01-24 | 13777.71 | 675.75..683.64GHz |
| <input type="checkbox"/> | 2012.1.00453.S | Arp220 | 15:34:57.27 | +23:30:10.5 | 7 | 725.76 | 2015-06-10 | 854.11 | 334.97..350.57GHz |
| <input type="checkbox"/> | 2012.1.00453.S | Arp220 | 15:34:57.27 | +23:30:10.5 | 7 | 241.92 | 2015-06-10 | 854.08 | 334.98..350.59GHz |
| <input type="checkbox"/> | 2012.1.00453.S | Arp220 | 15:34:57.27 | +23:30:10.5 | 7 | 725.76 | 2015-06-13 | 846.50 | 338.00..353.71GHz |
| <input type="checkbox"/> | 2012.1.00453.S | Arp220 | 15:34:57.27 | +23:30:10.5 | 7 | 241.92 | 2015-06-13 | 846.47 | 338.01..353.72GHz |

ALMA Science Archive Query

Query Form Results Table

Submit download request

Results Bookmark Export Table Results Help

Showing 50 of 50 rows.

Filter:

2011.0.00175.S

2011.0.00175.S

2011.0.00175.S

2011.0.00175.S

2011.0.00175.S

2011.0.00403.S

2011.0.00403.S

2012.1.00453.S

2012.1.00453.S

2012.1.00453.S

2012.1.00453.S

Project title

Merging IR-Luminous Galaxies -- Arp 220 and NGC 6240

PI name

Scoville, Nick

Proposal abstract

We propose imaging in Band 7 (HCN, CS, H26alpha and continuum) at 0.5" resolution and in Band 9 (HCN and continuum) at 0.25 arcsec resolution for the dense starburst regions of Arp 220 and NGC 6240. These unprecedented data will probe the distribution and dynamics of star forming gas and star formation activity in the dense disk structures to enable new theoretical understanding of the physics, dynamics, star formation activity and associated feedback in the most active and rapidly evolving galactic nuclei.

Acknowledgement

Publications making use of ALMA data must include the following statement in the acknowledgement:

"This paper makes use of the following ALMA data: ADS/JAO.ALMA#2011.0.00175.S. ALMA is a partnership of ESO (representing its member states), NSF (USA) and NINS (Japan), together with NRC (Canada) and NSC and ASIAA (Taiwan) and KASI (Republic of Korea), in cooperation with the Republic of Chile. The Joint ALMA Observatory is operated by ESO, AUI/NRAO and NAOJ."

In addition, publications from NA authors must include the standard NRAO acknowledgement:

"The National Radio Astronomy Observatory is a facility of the National Science Foundation operated under cooperative agreement by Associated Universities, Inc."

More columns

| | Velocity resolution | Frequency support |
|--|---------------------|-----------------------------------|
| | <div>m/s</div> | |
| | 27402.25 | 333.94..349.65GHz |
| | 27402.25 | 333.94..349.65GHz |
| | 27402.25 | 333.94..349.65GHz |
| | 27402.25 | 333.94..349.65GHz |
| | 13435.30 | 693.71..701.65GHz |
| | 13777.71 | 675.75..683.64GHz |
| | 13777.71 | 675.75..683.64GHz |
| | 854.11 | 334.97..350.57GHz |
| | 854.08 | 334.98..350.59GHz |
| | 846.50 | 338.00..353.71GHz |
| | 846.47 | 338.01..353.72GHz |

Query Form

Result

[Submit download request](#)

Showing 60 of 60 rows.

[illegible]

Add/remove displayed columns

Drag & drop columns above or below the red bar, move the red bar itself or click on the checkboxes.

Reorder columns

Drag & drop the columns or drag & drop the column headers directly in the results table.

[Show all columns](#)[Reset column order](#)

Order alphabetically

| | | |
|---------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------|
| <input checked="" type="checkbox"/> Project code | | Project code, in the form YYYY.NNNNN.C.AAA, where: |
| <input checked="" type="checkbox"/> Source name | | Name of the source as registered in the ASDM. Partial matches through wildcards (?, *), and boolean OR expressions (" "), can be used. |
| <input checked="" type="checkbox"/> RA | deg | Right Ascension of the field pointing. |
| <input checked="" type="checkbox"/> Dec | deg | Declination of the field pointing. |
| <input checked="" type="checkbox"/> Band | | ALMA receiver band. |
| <input checked="" type="checkbox"/> Integration | s | Aggregated integration time for the field in the ASDM. |
| <input checked="" type="checkbox"/> Release date | | |
| <input checked="" type="checkbox"/> Velocity resolution | m/s | Estimated velocity resolution from all the spectral windows, from frequency resolution. |
| <input checked="" type="checkbox"/> Frequency support | GHz | All frequency ranges used by the field |
| <hr/> | | |
| <input type="checkbox"/> Spatial resolution | | |
| <input type="checkbox"/> Frequency resolution | kHz | Estimated frequency resolution from all the spectral windows, using median values of channel widths. |
| <input type="checkbox"/> Pol products | | Polarisation products provided. |
| <input type="checkbox"/> Observation date | | |
| <input type="checkbox"/> PI name | | case-insensitive partial match over the full PI name. Wildcards can be used |
| <input type="checkbox"/> PWV | mm | Estimated precipitable water vapour from the XML_CALWVR_ENTITIES table. |
| <input type="checkbox"/> Member ous id | | MEMBER_OUSS_ID generating this ASDM. |
| <input type="checkbox"/> Asdm uid | | UID of the ASDM containing this Field. |
| <input type="checkbox"/> Project title | | Case-insensitive search over the project title |

Table Results Help

re columns

[illegible]

ALMA Request Handler

Your request is being handled
You will be redirected in a few seconds.
Please wait.....



ALMA Request Handler

[Login](#)

Anonymous User: Request #333833946 ✓

Request Title: [Click to edit](#)

Download Selected

☐ Include Raw

| Project / OUSet / Executionblock | File | Size | Accessible |
|--------------------------------------------------------------------------|----------------------------------------------------------|---------------|------------|
| ▼ <input checked="" type="checkbox"/> Request 333833946 | | | |
| ▼ <input checked="" type="checkbox"/> Project 2011.0.00175.S | | | |
| ▼ <input checked="" type="checkbox"/> Member OUS uid://A002/X327408/X276 | | | |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-09-06_001_of_006.tar | 4.6GB | ✓ |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-09-06_002_of_006.tar | 2.8GB | ✓ |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-09-06_003_of_006.tar | 1.6GB | ✓ |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-09-06_004_of_006.tar | 1.5GB | ✓ |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-09-06_005_of_006.tar | 569.2MB | ✓ |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-09-06_006_of_006.tar | 540.8MB | ✓ |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-12-07_001_of_001.tar | 8.7GB | ✓ |
| ▼ <input checked="" type="checkbox"/> Member OUS uid://A002/X327408/X279 | | | |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-12-17_001_of_003.tar | 2.9GB | ✓ |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-12-17_002_of_003.tar | 206.8MB | ✓ |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2012-12-17_003_of_003.tar | 76.7MB | ✓ |
| <input checked="" type="checkbox"/> product | 2011.0.00175.S_2013-03-05_001_of_001.tar | 5.2GB | ✓ |
| | | Total: 28.7GB | |

ALMA Request Handler

Anonymous User: Request #1135492157 ✓

Request Title: [Click to edit](#)

Download Selected

☐ Include Raw[illegible]

Choose one of the following download methods:

[Download Script](#)

The downloads are scripted for you. You just need to execute the script from the command line.

Download Manager

Due to security restrictions Apple has built into OSX, downloading files to your disk using the ALMA download manager with Safari or Chrome is not possible. Instead we recommend that you use Firefox or the the scripts option.

Web Start Download Manager

ALMA's download manager is launched as a desktop application via Java Web Start. It will not stop if you close your browser.

File List

View a text file containing a list of URLs.
This is useful for using third-party download
manager's such as *DownThemAll*.

```
chmod a+x downloadRequest12345.sh
./downloadRequest12345.sh
for i in `ls *.tar`; do tar -xvf $i; done
```

ALMA Science Archive Manual



Chapter 4

Programmatic access

4.1 astroquery

The AQ has been developed so that it can be accessed programmatically, i.e. from programs or scripts. Adam Ginsburg has developed the external tool astroquery <https://astroquery.readthedocs.org/en/latest/>. Astroquery is a python package which allows querying and retrieving data from many large observatories including ALMA. Authentication support for the download of proprietary data is provided as well as the extraction of FITS files only for Cycle 0 data (see also section 3.6.2).

As a simple example, querying the ALMA Archive for the source M83 and retrieving all the corresponding data is done by

```
from astroquery.alma import Alma
import numpy

# Querying the ALMA Science Archive for source M83
result = Alma.query_object('M83')

# Extracting a list of Member ObsUnitSets
member_ous = numpy.unique(result['Member_ous_id'])
```

4.2 VO

ALMA is strongly committed to providing VO services for all ALMA data. The necessary Table Access Protocol (TAP) infrastructure¹ is in place and already now serves as backend for the Archive Query web interface. Originally planned to serve only ALMA FITS products from the ALMA Pipeline, the strategy had to be revised recently to allow for a search through the complete holdings based on metadata. The preparative steps for this project are underway and VO services ObsTAP and SIAPv2 are currently planned for 2017. A VO service for FITS products is expected to follow.

¹using code from <https://github.com/openadc/tap>



Page Contents

Astroquery

- Introduction
- Installation
 - Requirements
- Using astroquery

Available Services

Catalog, Archive, and Other

- Catalogs
- Archives
- Simulations
- Other
- Developer documentation

Astroquery

This is the documentation for the Astroquery affiliated package of [astropy](#).

Code and issue tracker are on [GitHub](#).

Introduction

Astroquery is a set of tools for querying astronomical web forms and databases.

There are two other packages with complimentary functionality as Astroquery: [astropy.vo](#) is in the Astropy core and [pyvo](#) is an Astropy affiliated package. They are more oriented to general [virtual observatory](#) discovery and queries, whereas Astroquery has web service specific interfaces.

Check out the [A Gallery of Queries](#) for some nice examples.

Installation

The latest version of astroquery can be pip installed:

```
$ pip install astroquery
```

and the 'bleeding edge' master version:

```
$ pip install https://github.com/astropy/astroquery/archive/master.zip
```

or cloned and installed from source:

```
$ # If you have a github account:  
$ git clone git@github.com:astropy/astroquery.git  
$ # If you do not:  
$ git clone https://github.com/astropy/astroquery.git  
$ cd astroquery  
$ python setup.py install
```

The following modules have been completed using a common API:

- SIMBAD Queries (`astroquery.simbad`)
- VizieR Queries (`astroquery.vizier`)
- IRSA Dust Extinction Service Queries (`astroquery.irsa_dust`)
- NED Queries (`astroquery.ned`)
- Splatalogue Queries (`astroquery.splatalogue`)
- IRSA Image Server program interface (IBE) Queries (`astroquery.ibe`)
- IRSA Queries (`astroquery.irsa`)
- UKIDSS Queries (`astroquery.ukidss`)
- MAGPIS Queries (`astroquery.magpis`)
- NRAO Queries (`astroquery.nrao`)
- Besancon Queries (`astroquery.besancon`)
- NIST Queries (`astroquery.nist`)
- NVAS Queries (`astroquery.nvas`)
- GAMA Queries (`astroquery.gama`)
- ESO Queries (`astroquery.eso`)
- xMatch Queries (`astroquery.xmatch`)
- Atomic Line List (`astroquery.atomic`)
- ALMA Queries (`astroquery.alma`)
- Skyview Queries (`astroquery.skyview`)
- NASA ADS Queries (`astroquery.nasa_ads`)
- HEASARC Queries (`astroquery.heasarc`)

These others are functional, but do not follow a common & consistent API:

- Fermi Queries (`astroquery.fermi`)
- SDSS Queries (`astroquery.sdss`)
- ALFALFA Queries (`astroquery.alfalfa`)
- Spitzer Heritage Archive (`astroquery.sha`)
- LAMDA Queries (`astroquery.lamda`)
- OGLE Queries (`astroquery.ogle`)
- Open Exoplanet Catalogue (`astroquery.open_exoplanet_catalogue`)
- CosmoSim Queries (`astroquery.cosmosim`)

ALMA Archive Data Type

- Raw data
- Calibrated data
- Processed image files (in fits format), science-ready
- CASA data reduction script
- README

ALMA Archive Data Download Steps

- Click on <http://almascience.nao.ac.jp/alma-data/archive>
- Search using the archive query (source name, coordinates) or delivery list (data sets with future release data can only be accessed by the PI due to proprietary protection)
- Request the desired data-set
- Download the data
- Expand the downloaded file and use the science-ready fits image.

<http://jvo.nao.ac.jp/portal>



[Top](#) | [Search](#) | [VO Services](#) | [Subaru](#) | [ALMA](#) | [Analysis](#) | [Bookmark](#) | [JVOSpace](#)

p00 ver.151009 [News](#) | [FAQ\(J\)](#) | [Help\(J\)](#) | [Bugs\(J\)](#)

[→ Login](#)

I am a guest

News

- JVO portal version 2 (trial version) is now available at portal-v2 (2014-09-08)
- Frequency search functionality was implemented to the ALMA Archive (2014-09-08)

Registration

- Read "about registration".

Service Contents [Help\(J\)](#)

Data Search

- Quick Search
- Single VO Service
- Multiple VO Services
- JVO Sky
- JVOQL Search

Subaru

- Suprime-Cam
- HDS
- MOIRCS

ALMA

- ALMA SV Data
- ALMA Archive

Surveys

- Subaru Deep Survey
- IRSF Survey

Service Search

- Keyword Search
- Category Search (Auto)
- Category Search (Manual)
- Advanced Search

JVO Space

- Home
- Work

Astro Tools

- Source Extractor
- HyperZ

Bookmark

- Bookmark of VOService
- Bookmark of JVOSpace



Top|Search|VOServices|Subaru|ALMA|Analysis|Bookmark|JVOSpace

p01 ver.160309 News | FAQ(J) | Help(J) | Bugs(J)

→ Login

I am a guest

=> Location: Top Page > ALMA > ALMA Archive

ALMA Archive

Using the data for publication

The following statement should be included in the acknowledgment of papers using the ALMA datasets obtained from the JVO portal:

"This paper makes use of the following ALMA data: ADS/JAO.ALMA#<Project code>. ALMA is a partnership of ESO (representing its member states), NSF (USA) and NINS (Japan), together with NRC (Canada) , NSC and ASIAA (Taiwan), and KASI (Republic of Korea), in cooperation with the Republic of Chile. The Joint ALMA Observatory is operated by ESO, AUI/NRAO and NAOJ."

You can find the project code (e.g. 2011.0.01234.S) on the dataset info page where you download the data.

Please also include the following sentence on the title page as a footnote to the title or in the acknowledgment of the paper.

"[Part of] the data are retrieved from the JVO portal (<http://jvo.nao.ac.jp/portal>) operated by the NAOJ"

Target Name Project Code Coords Frequency Desktop Viewer

| # | Project Code | # of Data | Title | Last Update |
|---|----------------|-----------|----------------------------------------------------------------------------------------------------------|-------------|
| 1 | 2013.1.01004.S | 83 | Revealing the secrets of VLA1623: an in-depth look into the earliest star formation stage | 2016-03-25 |
| 2 | 2013.1.00911.S | 30 | Molecular gas conditions and shocks in the superwind of the starburst galaxy NGC 1808 | 2016-03-25 |
| 3 | 2013.1.01042.S | 4 | Revealing the Physical Properties of Molecular Gas Associated with the Magellanic SNR N132D | 2016-03-25 |
| 4 | 2013.1.00457.S | 113 | A Molecular Disk Survey of Very Low-Mass TWA Members | 2016-03-25 |
| 5 | 2013.1.00839.S | 8 | Revealing the Low-Mass End of the Core Mass Function in Rho Ophiuchus Star Forming Region | 2016-03-25 |
| 6 | 2013.1.00783.S | 19 | ALMA Identification of An Accreting Disk in a Proto-Brown Dwarf Candidate, L328-IRS, and Its Implication | 2016-03-25 |
| 7 | 2013.1.00760.S | 26 | Measuring the Most Energetic Event in the Universe | 2016-03-25 |
| 8 | 2013.1.00718.S | 14 | An ALMA 1.3 mm spectroscopic survey in the Hubble Ultra Deep Field | 2016- |

[Top](#)[Search](#)[IVO Services](#)[Subaru](#)[ALMA](#)[Analysis](#)[Bookmark](#)[JVOSpace](#)p01 ver.160309 [News](#) | [FAQ\(J\)](#) | [Help\(J\)](#) | [Bugs\(J\)](#)[Login](#)

I am a guest

=> Location: [Top Page](#) > [ALMA](#) > [ALMA Archive](#)

ALMA Archive

Using the data for publication

The following statement should be included in the acknowledgment of papers using the ALMA datasets obtained from the JVO portal:

"This paper makes use of the following ALMA data: ADS/JAO.ALMA#<Project code>. ALMA is a partnership of ESO (representing its member states), NSF (USA) and NINS (Japan), together with NRC (Canada) , NSC and ASIAA (Taiwan), and KASI (Republic of Korea), in cooperation with the Republic of Chile. The Joint ALMA Observatory is operated by ESO, AUI/NRAO and NAOJ."

You can find the project code (e.g. 2011.0.01234.S) on the dataset info page where you download the data.

Please also include the following sentence on the title page as a footnote to the title or in the acknowledgment of the paper.

"[Part of] the data are retrieved from the JVO portal (<http://jvo.nao.ac.jp/portal>) operated by the NAOJ"

[Target Name](#) [Project Code](#) [Coords](#) [Frequency](#) [Desktop Viewer](#)1. Center Coords or Target Name Sample Format : 2. Search Radius

| # | Target Name | Coords | # of Data |
|---|-------------|---------------------------------|-----------|
| 1 | m83 | 13h37m04.619213 -29d50m21.25000 | 2 |
| 2 | M83 | 13h37m04.380613 -29d55m46.68984 | 10 |

OK

=> Location: Top Page > ALMA > Archive > Project Info

ALMA Archive : Project Info

Project Code: 2013.1.01004.S

☐ Show all data including calibration data. Initially shown are the data of which the filename ends with ".pbcor.fits", ".pbcorr.fits", ".image.fits" or "clean.fits".

| # | dataset id | target name | ra/dec (J2000) | size (arcmin2) | band | freq. range (GHz) | data type | 3rd axis | Cube size (XxYxF) ? | image resol (arcsec) | freq. resol (MHz) | obs date | release date? | original fits |
|----|--------------|-------------|---------------------|----------------|-------|--------------------|----------------|-----------|---------------------|----------------------|-------------------|------------|---------------|------------------------------------|
| 1 | ALMA01007710 | VLA1623A | 16h26m26.4-24d24m32 | 5.97x5.97 | Band6 | 215.606 -- 220.164 | intensity map | frequency | 256x256x1x1 | 1.40 | 4,557.670 | 2014-08-07 | 2016-01-29 | VLA1623A.cont.pbcor.fits |
| 2 | ALMA01007714 | VLA1623A | 16h26m26.4-24d24m32 | 5.97x5.97 | Band6 | 215.606 -- 220.164 | intensity map | frequency | 256x256x1x1 | 1.40 | 4,557.670 | 2014-08-07 | 2016-01-29 | VLA1623A.cont.image.fits |
| 3 | ALMA01007717 | VLA1623A | 16h26m26.4-24d24m32 | 5.97x5.97 | Band6 | 219.553 -- 219.564 | intensity cube | frequency | 256x256x75x1 | 1.40 | .146 | 2014-08-07 | 2016-01-29 | VLA1623A.C18O.image.fits |
| 4 | ALMA01007718 | VLA1623A | 16h26m26.4-24d24m32 | 5.97x5.97 | Band6 | 219.553 -- 219.564 | intensity cube | frequency | 256x256x75x1 | 1.40 | .146 | 2014-08-07 | 2016-01-29 | VLA1623A.C18O.pbcor.fits |
| 5 | ALMA01007722 | VLA1623A | 16h26m26.4-24d24m32 | 5.97x5.97 | Band6 | 216.105 -- 216.116 | intensity cube | frequency | 256x256x75x1 | 1.40 | .144 | 2014-08-07 | 2016-01-29 | VLA1623A.DCOp.image.fits |
| 6 | ALMA01007723 | VLA1623A | 16h26m26.4-24d24m32 | 5.97x5.97 | Band6 | 216.105 -- 216.116 | intensity cube | frequency | 256x256x75x1 | 1.40 | .144 | 2014-08-07 | 2016-01-29 | VLA1623A.DCOp.pbcor.fits |
| 7 | ALMA01008624 | VLA1623A | 16h26m26.4-24d24m30 | 0.67x0.67 | Band6 | 217.097 -- 221.268 | intensity map | frequency | 160x160x1x1 | 0.25 | 4,170.501 | 2015-01-03 | 2016-02-13 | vla1623_cont_USB.image.pbcor.fits |
| 8 | ALMA01008627 | VLA1623A | 16h26m26.4-24d24m30 | 0.67x0.67 | Band6 | 217.817 -- 217.822 | intensity cube | frequency | 160x160x30x1 | 0.25 | .153 | 2015-01-03 | 2016-02-13 | vla1623_line_spw1.image.pbcor.fits |
| 9 | ALMA01008631 | VLA1623A | 16h26m26.4-24d24m30 | 0.67x0.67 | Band6 | 217.813 -- 220.442 | intensity map | frequency | 160x160x1x1 | 0.25 | 2,629.241 | 2015-01-03 | 2016-02-13 | vla1623_cont_LSB.image.pbcor.fits |
| 10 | ALMA01008633 | VLA1623A | 16h26m26.4-24d24m30 | 0.67x0.67 | Band6 | 220.393 -- | intensity | frequency | 160x160x57x1 | 0.25 | .154 | 2015-01-03 | 2016-02-13 | vla1623_line_spw0.image.pbcor.fits |



=> Location: Top Page > ALMA > Archive > Target Info > Dataset Info

ALMA Archive : Dataset Info

Summary

Binning Data

Desktop Viewer

Using the data

■ Target

VLA1623A

■ Coord. (RA/DEC J2000)

16h26m26.4-24d24m32

■ Image Size (arcmin2)

5.97x5.97

■ Band Name

Band6

■ Freq. Range. (GHz)

219.553 -- 219.564

■ Cube Pix ?

256x256x75x1

■ 3rd(4th) Axis

frequency

■ Dataset ID

ALMA01007717

■ Date of Observations

2014-08-07

■ Image Resol. (arcsec)

1.40

■ Data Type

intensity cube

■ Spectrum Resol. (MHz)

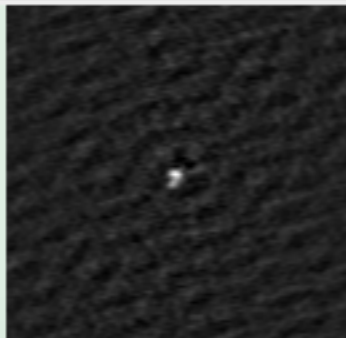
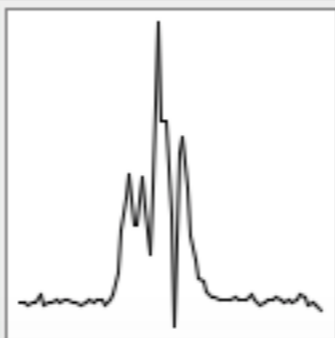
.146

■ Original Filename

VLA1623A.C180.image.fits

■ Project Code

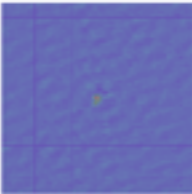
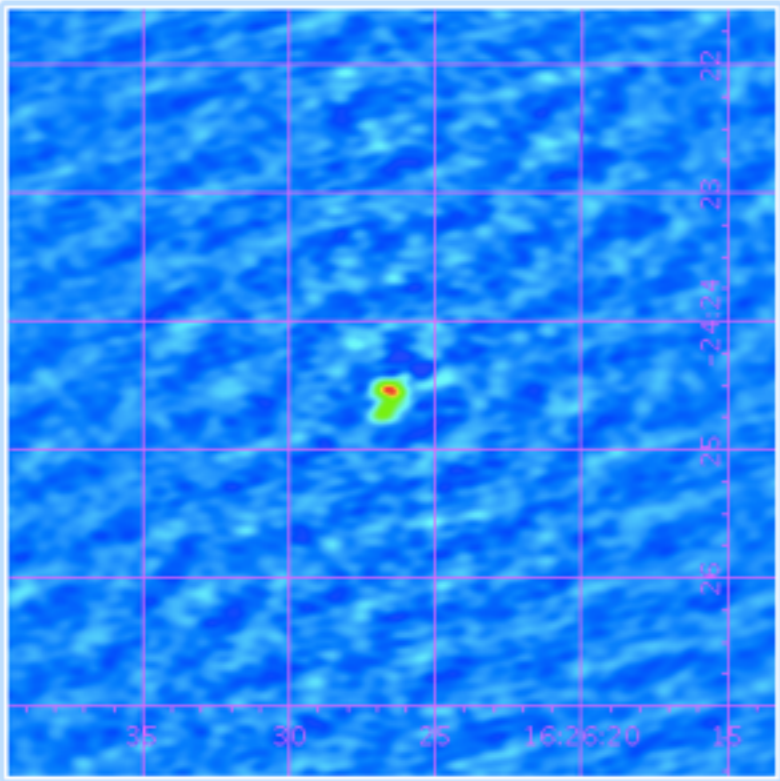
2013.1.01004.5

| data id | image | spect | file size (byte) | Download | WebQL | Readme |
|--------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------|--------------------------|---------------------------------------------------|------------------------|
| ALMA01007717 |  |  | 19,748,160 | Download | WebQL WebQL v2 | Readme |



Data Information

| | | | | |
|---------------|---------------|--------------|----------------|--------------------------|
| • Data Set ID | • Object Name | • R.A. | • Dec. | • Observation Date (UTC) |
| ALMA01007717 | VLA1623A | 16h26m26.49s | -24d24m32.088s | 2014-09-07T11:38:26.999Z |

Main Perspective: Image



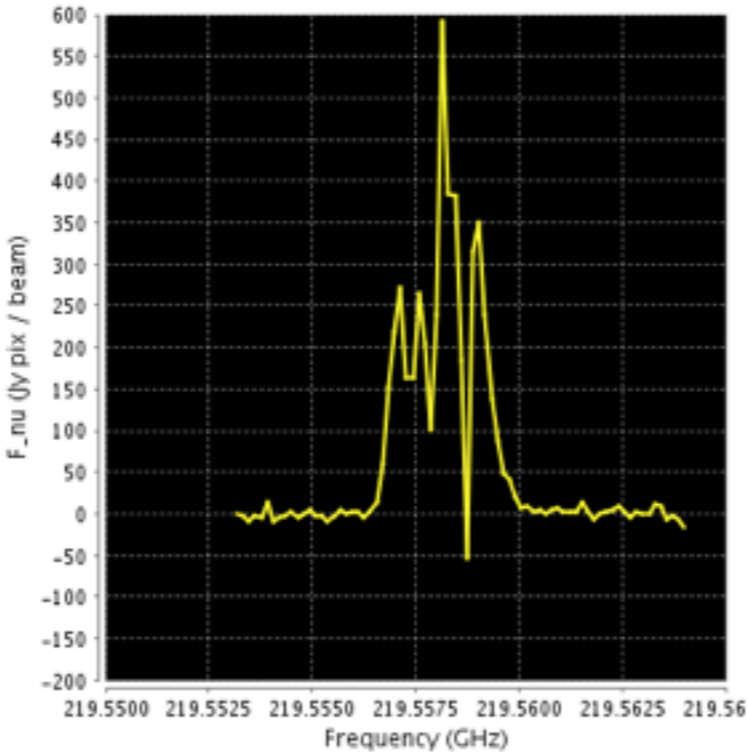
Resolution :
▼ Enumerate...
22.40 asec/pix
11.20 asec/pix
5.600 asec/pix
2.800 asec/pix
1.400 asec/pix


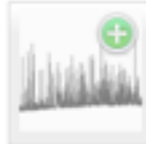
Zoom :
 
► Enumerate...




Select Sub-region

☐ Log Scale
☒ Coordinate Grid

Zoom : x1
R.A. : 16h26m26.49s
Dec. : -24d24m33.488s



Resolution :
 
► Enumerate...

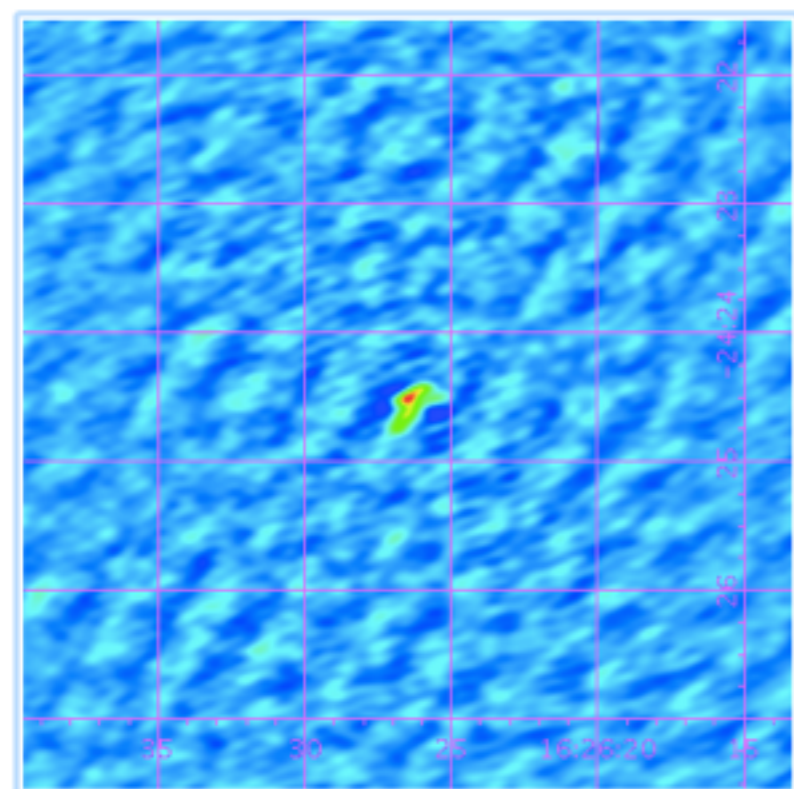
Frequency Range :
  
Select Sub-range

☐ Temperature
☐ Log Scale
Res. : 146.475 kHz/ch
219.556 GHz

Data Information

| | | | | |
|---------------|---------------|--------------|----------------|--------------------------|
| • Data Set ID | • Object Name | • R.A. | • Dec. | • Observation Date (UTC) |
| ALMA01007717 | VLA1623A | 16h26m26.49s | -24d24m32.088s | 2014-09-07T11:38:26.999Z |

Main Perspective: Image



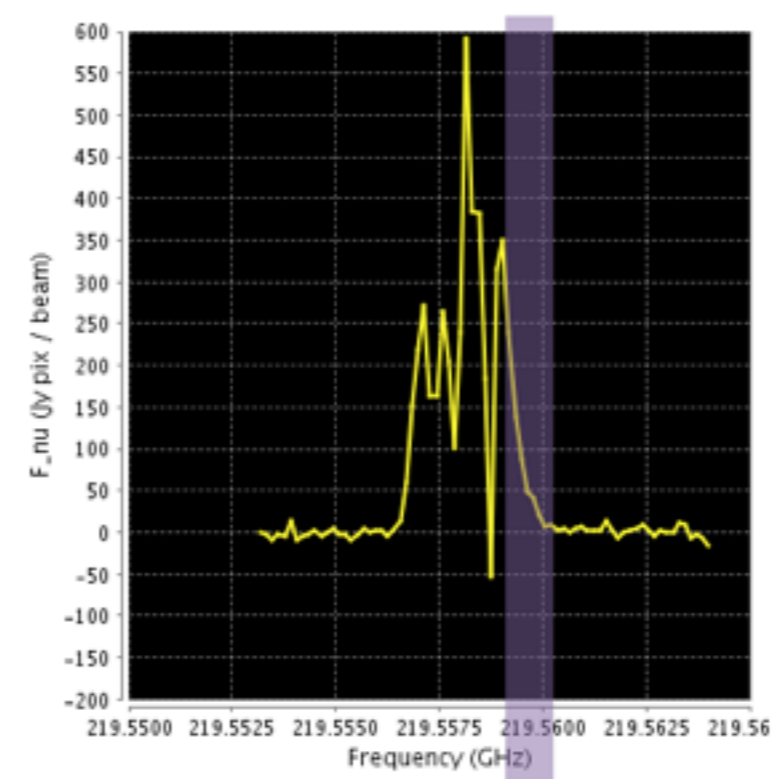
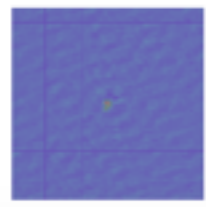
Resolution :
▼ Enumerate...
22.40 asec/pix
11.20 asec/pix
5.600 asec/pix
2.800 asec/pix
1.400 asec/pix

Zoom :
[Zoom Out] [Zoom In]
► Enumerate...

Select Sub-region

☐ Log Scale
☒ Coordinate Grid

Zoom : x1
R.A. : 16h26m26.49s
Dec. : -24d24m33.488s



Resolution :
[Zoom Out] [Zoom In]
► Enumerate...

Frequency Range :
[Frequency Range Controls]
Back to Pan Mode

☐ Temperature
☐ Log Scale
Res. : 146.475 kHz/ch
219.559 GHz

[full FITS download \(18.8MB\)](#)

[user guide](#)

[send feedback](#)

VLA1623A

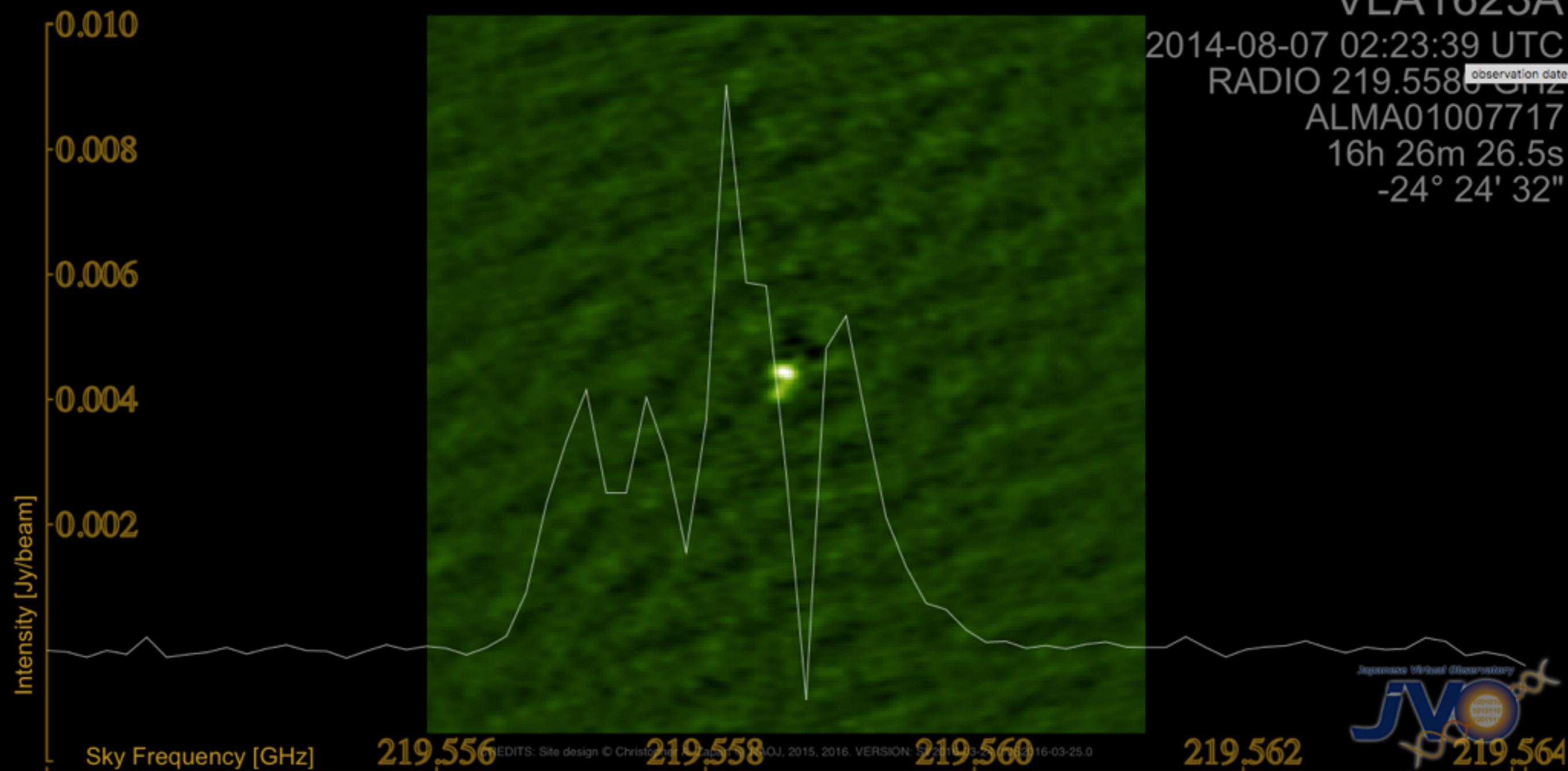
2014-08-07 02:23:39 UTC

RADIO 219.5586 GHz observation date

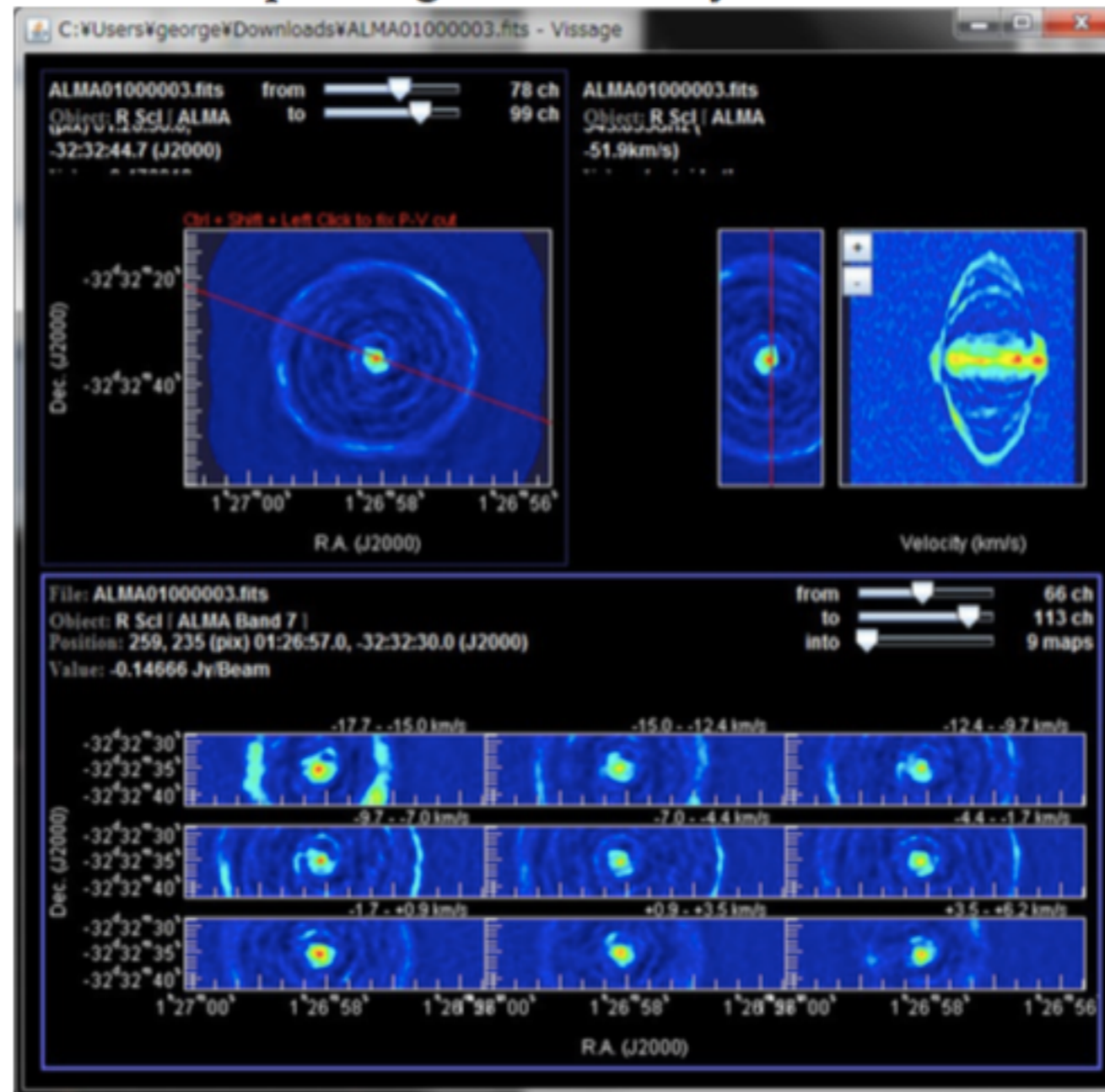
ALMA01007717

16h 26m 26.5s

-24° 24' 32"



- to view multiple images in a free layout



To download and use of Vissage on your personal computer, refer to <http://jvo.nao.ac.jp/download/Vissage/>.

References

- Korean ALMA web : <http://alma.kasi.re.kr/>
- EA-ARC ALMA Archive Data User Guidebook
- JVO Quick Look : <http://jvo.nao.ac.jp/portal/top-page.do>
- ALMA portal : <https://almascience.nao.ac.jp>