



CARTA Demo v 1.4

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CARTA

Cube Analysis and Rendering Tool for Astronomy

Project: ASIAA, IDIA, NRAO, U Alberta

Webpage: <https://cartavis.github.io/>

Github: <https://github.com/CARTAviz>

Goal: To build a high performance, versatile image viewer for astronomy

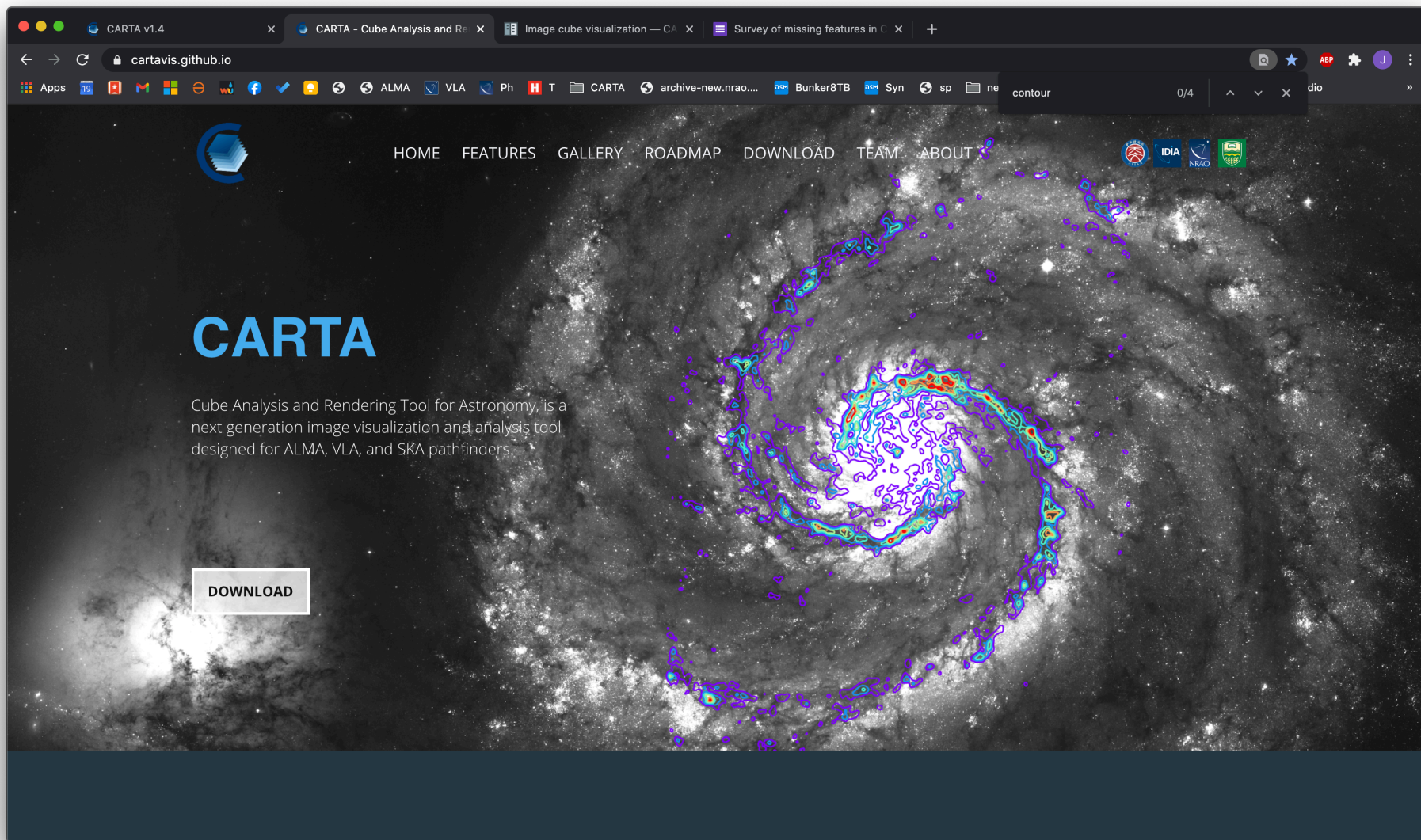
Current version 1.4

Usage cases:

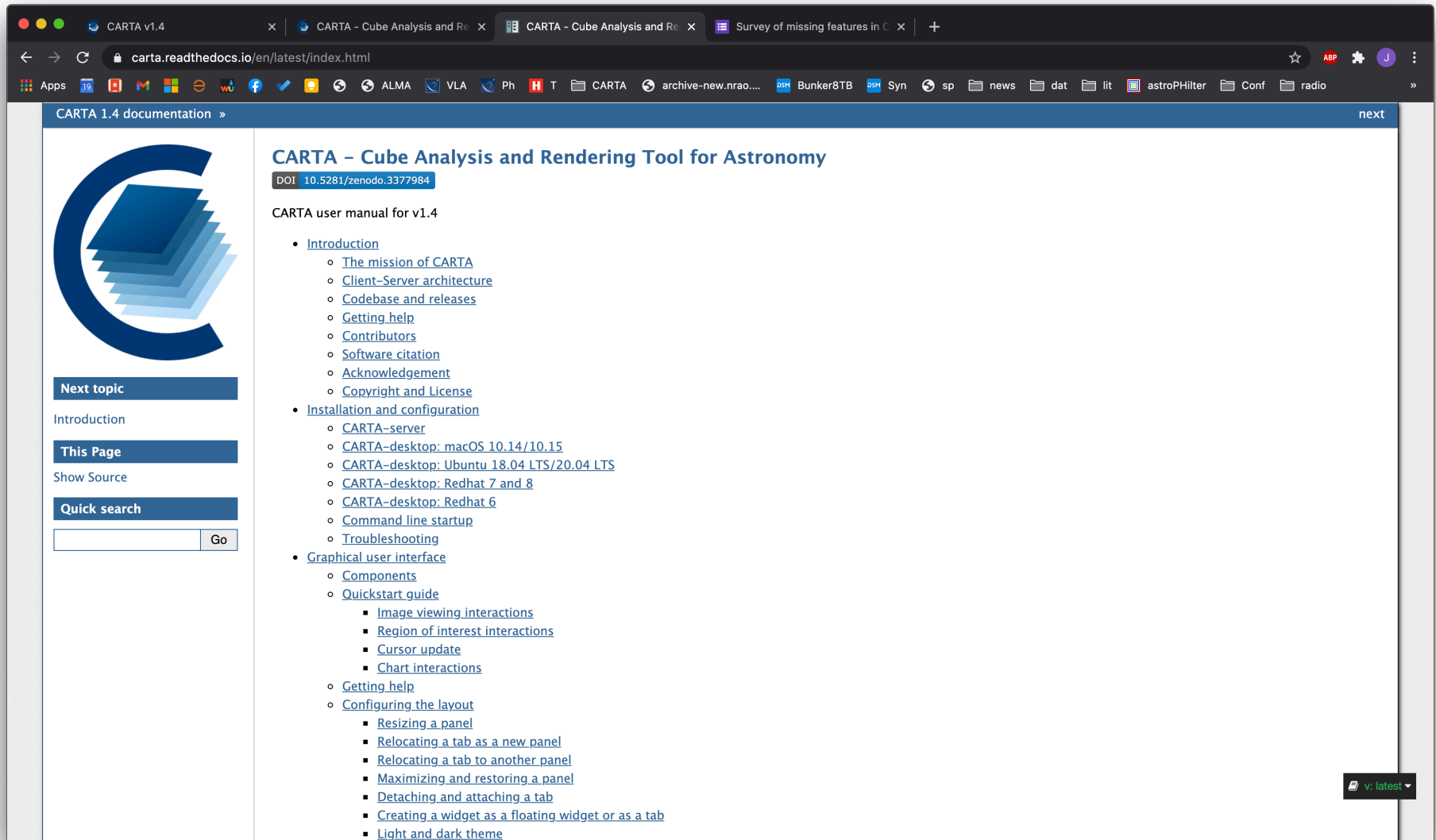
- **CASA viewer replacement** (for the moment excluding interactive clean and visibility display)
- Archive interface for SKA precursors, **ALMA**, NRAO SRDP
- Stand alone analysis tool
- Scriptable interface (publication ready images, interaction for analysis)
- Collaborative tool



CARTA webpage: cartavis.github.io



CARTA webpage: cartavis.github.io



The screenshot shows a web browser displaying the CARTA 1.4 documentation page. The browser's address bar shows the URL `carta.readthedocs.io/en/latest/index.html`. The page title is "CARTA 1.4 documentation". The main content area features a large blue logo on the left, a "Next topic" button, and a "Quick search" input field. The main heading is "CARTA - Cube Analysis and Rendering Tool for Astronomy" with a DOI of `10.5281/zenodo.3377984`. Below this is the "CARTA user manual for v1.4" section, which contains a list of links for various topics. A "v: latest" dropdown menu is visible in the bottom right corner of the page content.

CARTA 1.4 documentation »

CARTA - Cube Analysis and Rendering Tool for Astronomy

DOI `10.5281/zenodo.3377984`

CARTA user manual for v1.4

- [Introduction](#)
 - [The mission of CARTA](#)
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 - [Codebase and releases](#)
 - [Getting help](#)
 - [Contributors](#)
 - [Software citation](#)
 - [Acknowledgement](#)
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 - [CARTA-server](#)
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 - [Detaching and attaching a tab](#)
 - [Creating a widget as a floating widget or as a tab](#)
 - [Light and dark theme](#)

CARTA on github.com/CARTAvis

The screenshot shows the GitHub profile page for the organization CARTAvis. The browser tabs include 'CARTA v1.4', 'CARTA - Cube Analysis and Re...', 'CARTA - Cube Analysis and Re...', 'Survey of missing features in C...', and 'CARTAvis - GitHub'. The address bar shows 'github.com/CARTAvis'. The navigation bar includes links for 'Why GitHub?', 'Team', 'Enterprise', 'Explore', 'Marketplace', 'Pricing', and 'Search', along with 'Sign in' and 'Sign up' buttons. The profile header features the CARTAvis logo and the name 'CARTAvis'. Below this, there are statistics for 'Repositories 17', 'Packages', 'People 2', and 'Projects'. The 'Pinned repositories' section highlights the 'carta' repository with a description: 'To CARTA users, this repo holds the CARTA release packages. Please use this repo to log bugs and feature requests. These will be triaged by the development team and prioritised as necessary in the ...' and shows 6 stars. A search bar and filters for 'Type', 'Language', and 'Sort' are present. The main content area displays two repositories: 'carta-backend' (C++ language, 2 forks, 10 stars, 77 issues, 9 pull requests, updated 1 hour ago) and 'carta-casacore' (CMake language, 0 forks, 1 star, 1 issue, 0 pull requests, updated 2 hours ago). A 'Top languages' box shows C++ (red), TypeScript (blue), JavaScript (yellow), Python (dark blue), and CMake (grey). A 'People' box shows 2 members with profile icons.

CARTA

- The focus is on performance for large datasets
 - Memory efficient image loading (1TB cubes in seconds)
 - Parallelization and GPU-accelerated rendering
 - Progressive and responsive update of spectral profile
 - Tiled image rendering
- Works on CASA, fits, MIRIAD, HDF5 image (cube) formats
- Image analysis tasks frequently use CASA code to ensure consistency
- In remote version (recommended) it is run as a server, and connected to by one or multiple frontends in a browser
- A stand-alone version launches electron (which is a standalone browser replacement)
- OS: MacOS, Ubuntu, RHEL
- Attention: VNC does not support WebGL, so an environment variable needs to be set first:
`LIBGL_ALWAYS_INDIRECT=1`
- NRAO instructions: <https://casadocs.readthedocs.io/en/latest/notebooks/carta.html>

CARTA

Features:

- Image rendering with min/max clipping, scaling functions and color maps
- Image panning, zooming, etc.
- Hardcopy
- Regions: rotating box, ellipses, polygons
- X,Y and Z profiles
- Image WCS matching spatially and spectrally
- Image blinking
- Contours with different generators, colors, color maps
- Spectral profiles can convert spectral axis labels (velocity, frequency, wavelength)
- Histogram
- Image/Region Statistics
- Stokes analysis widget
- Moment generator
- Spectral line labelling
- Spectral smoothing
- Catalog overlays
- Server authentication
- Tiled rendering
- Docking and Preferred layouts and layout saving

CARTA – Start

```
(base) jott@MacBook-Pro ~> carta --remote
```

```
1
```

Starting CARTA in remote mode

To access CARTA, please enter either of the following URLs in your local web browser:

```
MacBook-Pro.local:2000/?socketUrl=ws://MacBook-Pro.local:3001
```

OR

```
192.168.0.51:2000/?socketUrl=ws://192.168.0.51:3001
```

Press ctrl+c to exit

(note that multiple browsers can point to the same server)

File loading

The screenshot shows the CARTA v1.4 web interface. A 'File Browser' window is open, displaying a list of files in the directory 'Users > jott > Documents > CARTA > demo'. The files are listed in a table with columns for Filename, Type, Size, and Date. The first file, 'IRC10216.36GHzcont.image.fits', is selected. To the right of the table, the 'File Information' panel shows the following metadata:

```
Name = IRC10216.36GHzcont.image.fits
Shape = [300, 300, 1, 1]
Number of channels = 1
Number of stokes = 1
Coordinate type = Right Ascension, Declination
Projection = SIN
Image reference pixels = [151.0, 151.0]
Image reference coords = [09:47:57.3820, +013.16.40.6600]
Image ref coords (deg) = [146.989 deg, 13.278 deg]
Pixel increment = -0.4", 0.4"
Celestial frame = FK5, J2000
Spectral frame = LSRK
Velocity definition = RADIO
Pixel unit = Jy/beam
Restoring beam = 2.81862" X 1.53258", -19.1115 deg
```

Below the file list, there is a search bar with the text 'Filter by filename with fuzzy search' and a 'Fuzzy search' dropdown menu. At the bottom of the file browser window, there are 'Close' and 'Load' buttons. The main interface shows 'No image loaded' and 'No file loaded' messages, along with the instruction 'Load a file using the menu'.

Help

? = help menu

- 1) Navigation**
 - Pan image `click`
 - Pan image (inside region) `middle-click`
 - Pan image (inside region) `⌘ cmd click`
 - Zoom image `mouse-wheel`
- 2) Regions**
 - Toggle region creation mode `C`
 - Toggle current region lock `L`
 - Unlock all regions `⇧ shift L`
 - Delete selected region `del`
 - Delete selected region `backspace`
 - Deselect region/Cancel region creation `esc`
 - Switch region creation mode `⌘ cmd`
 - Symmetric region creation `⇧ shift`
 - Region properties `double-click`
- 3) Frame controls**
 - Next image `⌘ cmd]`

Help

The screenshot displays the CARTA v1.4 web interface. The browser address bar shows the URL `192.168.0.51:2000/?socketUrl=ws://192.168.0.51:3000`. The main window is titled "Spatial Profiler" and contains a central image viewer showing a radio astronomy data cube. A red vertical line indicates the cursor position. To the right of the image viewer are two profile plots: "X Profile: Cursor" and "Y Profile: Cursor". The X profile plot shows a peak in intensity around X coordinate 150. The Y profile plot shows a peak around Y coordinate 150. Below the image viewer is a histogram and a color map control. The bottom right of the interface shows an "Animator" control with buttons for "First", "Prev", "Play", "Next", and "Last", and a "Mode" dropdown set to "Image". The frame rate is set to 5. The image name is "IRC10216_HC3N.cube.rt" and the current frame is 32 out of 51.

Spatial Profiler

Spatial profiler widget allows users to view a profile from a horizontal cut or a vertical cut at the cursor position in the image viewer. The cursor position may be fixed in the image viewer by pressing **F** key. Pressing again will unfreeze the cursor.

The cursor position in the image viewer is displayed as a red vertical line in the spatial profile plot.

When cursor is in the image viewer, the cursor position and pointed pixel value in image and world coordinates are reported at the bottom-left corner of the spatial profiler widget. When cursor moves into the spatial profile plot, numerical values of the profile at the cursor position (displayed as a grey vertical line) will be reported instead.

Profile mean and RMS

As an option in the "Styling" tab of the spatial profiler settings dialogue, mean and RMS values of the profile can be visualized as a green dashed line and a shaded area in the profile plot. Numerical values are displayed at the bottom-left corner. Note that CARTA includes all data in the current zoom level of the profile plot to perform the calculations. If zoom level changes, mean and RMS values will be updated too.

Profile smoothing

The displayed profile can be smoothed via the "Smoothing" tab of the spatial profiler settings dialogue (the cog icon).

Interactivity: zoom and pan

The x and y ranges of the spatial profile plot can be modified by

- scrolling wheel (up to zoom in and down to zoom out with respect to the cursor position)
- click-and-drag horizontally to zoom in x
- click-and-drag vertically to zoom in y
- click-and-drag diagonally to zoom in both x and y
- double-click to reset x and y ranges
- shift + click-and-drag to pan in x

In addition, the x and y ranges can be explicitly set in the spatial profiler settings dialogue.

Help available for each widget

Widgets

The screenshot displays the CARTA v1.4 software interface. The main window shows a radio astronomy image of IRC10216_HC3N.cube_r0.5.image. A yellow box on the left contains the text: "Widgets: open and close, pin, move, tab, rearrange". The interface includes several panels:

- Top Panel:** Browser tabs and address bar showing the URL `192.168.0.51:2000/?socketUrl=ws://192.168.0.51:3000`.
- Image Panel:** A circular radio image with WCS coordinates: `WCS: (9:47:50.42, 13:17:11.2); Image: (404, 226); Value: 1.6146e-2 Jy/beam*; Frequency (LSRK): 36.3949 GHz; Velocity: -20.8801 km/s`. The axes are labeled "Declination" and "Right ascension".
- X Profile:** A line plot showing "Value (Jy/beam)" vs "Y coordinate" for the cursor position. The y-axis ranges from -1.50×10^{-2} to 2.50×10^{-2} . The x-axis ranges from 0 to 250. A vertical red line is at Y coordinate 123.
- Z Profile:** A histogram plot showing "Value (Jy/beam)" vs "LSRK, Frequency (GHz)". The y-axis ranges from -1.00×10^{-2} to 3.00×10^{-2} . The x-axis ranges from 36.393 to 36.398 GHz. A vertical red line is at 36.395 GHz.
- Render Configuration:** A histogram showing the distribution of values. The x-axis is "Value (Jy/beam)" from -0.02 to 0.03. The y-axis shows percentages from 90% to 100%. Controls include "Histogram" (Per-Channel), "Scaling" (Linear), "Color map", "Invert color map", "Clip Min" (-0.0224189), and "Clip Max" (0.03193014).
- Channel Panel:** A slider for "Channel" selection, ranging from 0 to 51. The current channel is 20. The "Req" is 20 and "Current" is 20.

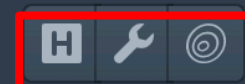
Widgets

The screenshot displays a web-based interface for radio astronomy data analysis. The main window shows a radio galaxy image with axes for Right ascension (30 to 35:30) and Declination (35:00 to 16:00). A menu is open over the image, listing options: Theme, Layouts (Existing Layouts, Save Layout, Delete Layout), Images, File header, and Contours. The Existing Layouts sub-menu is expanded, showing 'Default' (selected), 'Cube View', 'Cube Analysis', 'Continuum Analysis', 'test', and 'test2'. A yellow text box on the right states: 'Widgets: Pre-defined layouts Layouts can also be saved and restored'. On the right side, there are two profile plots: 'X Profile: Cursor' and 'Z Profile: Cursor'. The Z Profile plot shows a value of 1417 at the cursor position, with data: (1417.137 MHz, 2.68e-4) and Mean/RMS: 8.18e-4 / 1.81e-3. At the bottom, a 'Render Configuration' panel shows a '99.95%' threshold selected, a 'Linear' scaling, and a color map. A graph below the render configuration shows a signal profile with a peak at the cursor position.

Widgets

192.168.0.51:2000/?socketOn=ws://192.168.0.51:3000

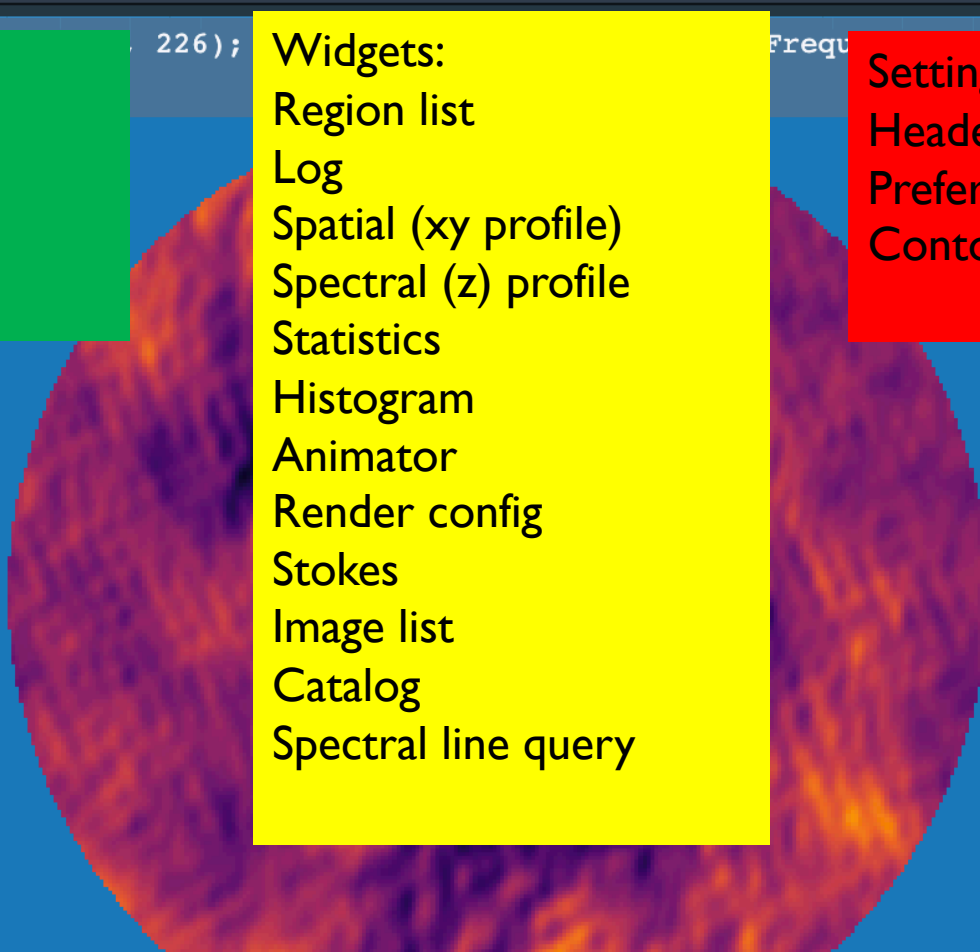
ALMA VLA Ph H T CARTA archive-new.nrao... DSM Bunker8TB



Regions:
Point
Rectangle
Ellipse
Polygon

Widgets:
Region list
Log
Spatial (xy profile)
Spectral (z) profile
Statistics
Histogram
Animator
Render config
Stokes
Image list
Catalog
Spectral line query

Settings/Info:
Header
Preferences
Contours



Demo

- Loading
- Help
- Widgets
- Layouts

Image display widget

File View Widgets Help



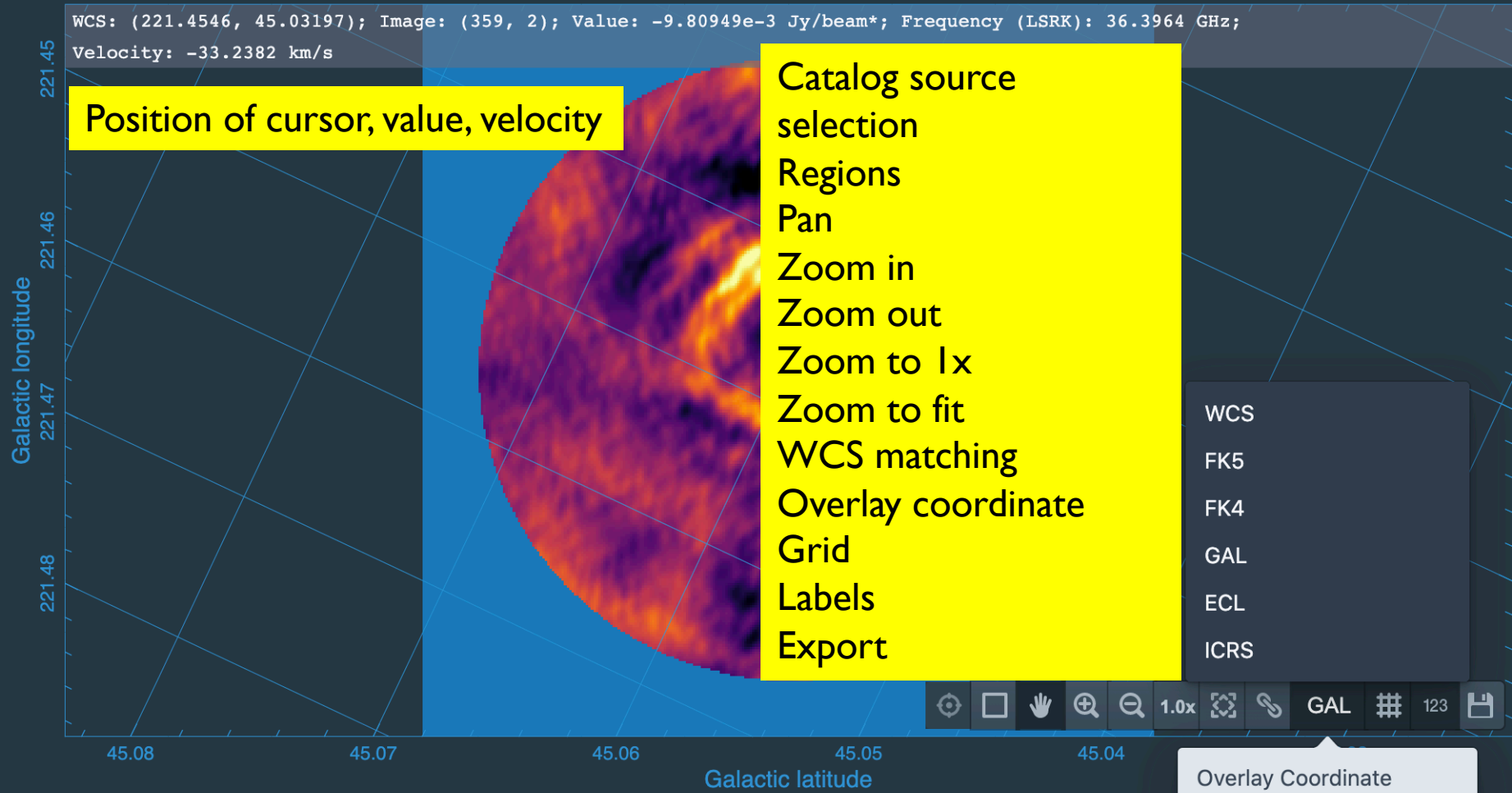
IRC10216_HC3N.cube_r0.5.image

WCS: (221.4546, 45.03197); Image: (359, 2); Value: -9.80949×10^{-3} Jy/beam*; Frequency (LSRK): 36.3964 GHz;
Velocity: -33.2382 km/s

Position of cursor, value, velocity

- Catalog source selection
- Regions
- Pan
- Zoom in
- Zoom out
- Zoom to 1x
- Zoom to fit
- WCS matching
- Overlay coordinate
- Grid
- Labels
- Export

- WCS
- FK5
- FK4
- GAL
- ECL
- ICRS



Overlay Coordinate
Current: Galactic coordinates

Render Configuration

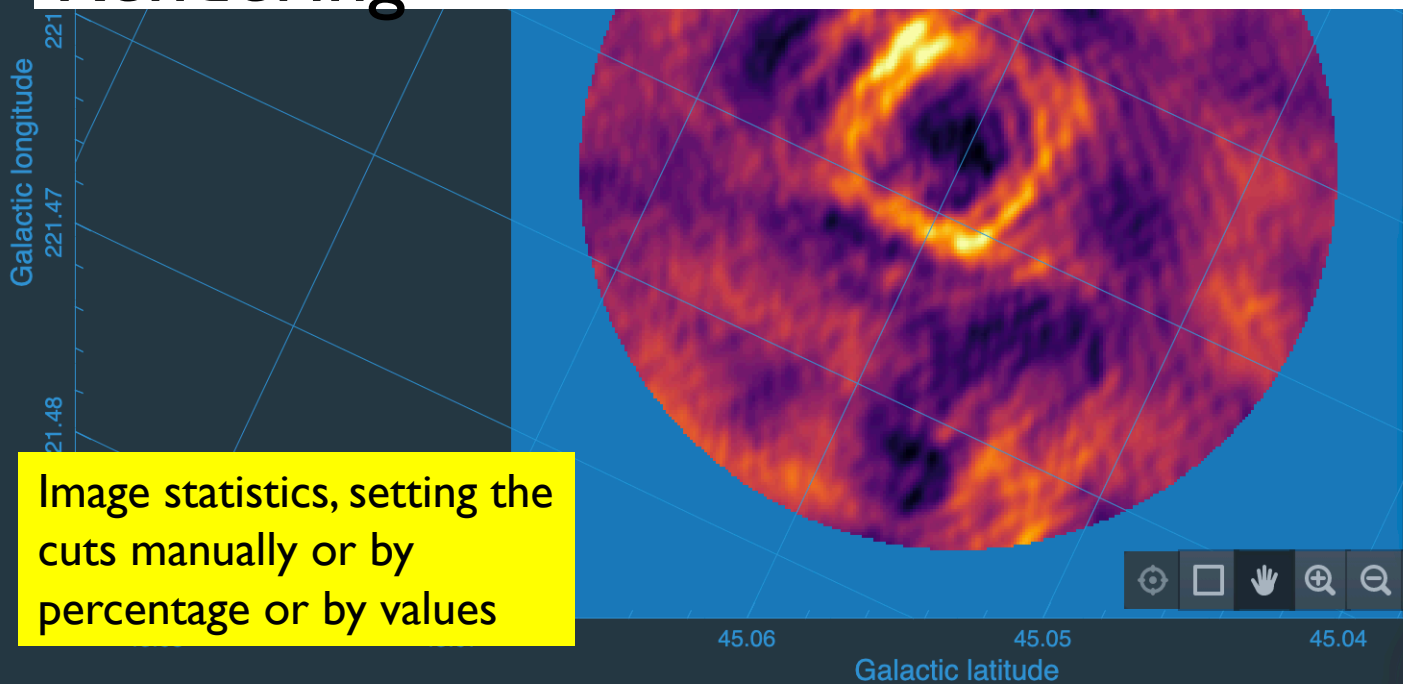
- 90%
- 95%
- 99%
- 99.5%
- 99.9%
- 99.95%
- 99.99%
- 100%
- Custom

Histogram Per-Channel

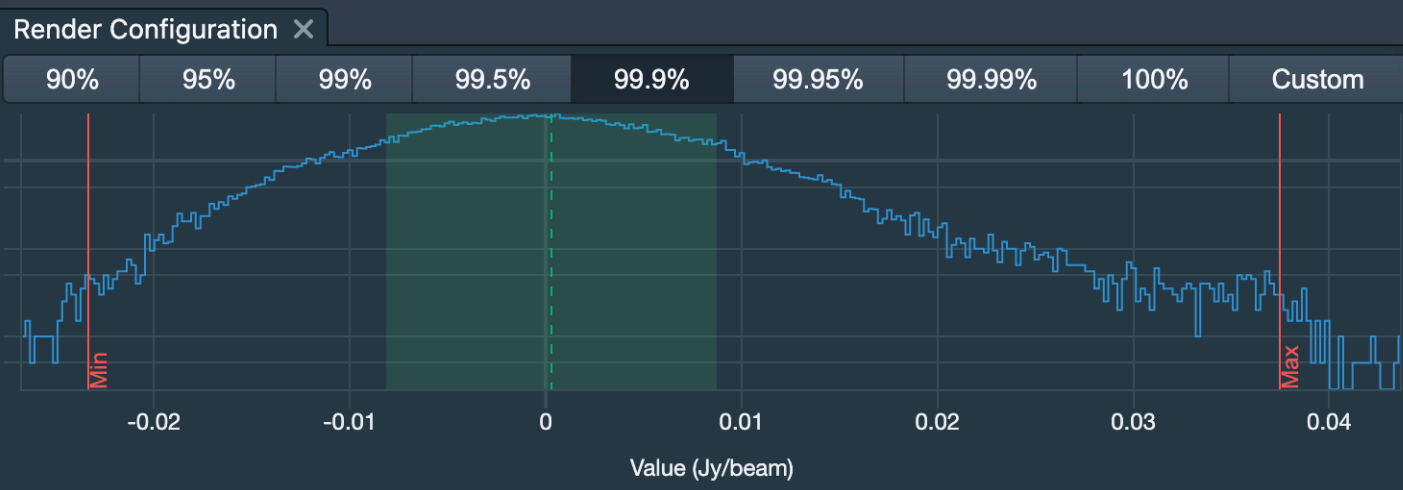
Rendering

Image statistics, setting the cuts manually or by percentage or by values

Selection of Color map
Scaling
Per plane or per cube scaling



- WCS
- FK5
- FK4



Current: Galactic coordinates

Histogram Per-Channel

Scaling Linear

Color map [Color bar]

Invert color map

Clip Min -0.0234227

Clip Max 0.0374237

Profiles

Spatial profile

Line shape can be changed (color, steps/connect/points), spectral smoothing; data can be saved as ascii

Spectral profile

Marker is the position of the cursor/animator

For spectral profile, regions can be selected, as well as statistics, axis labels (velocity, frequency, channel, wavelength, ..)

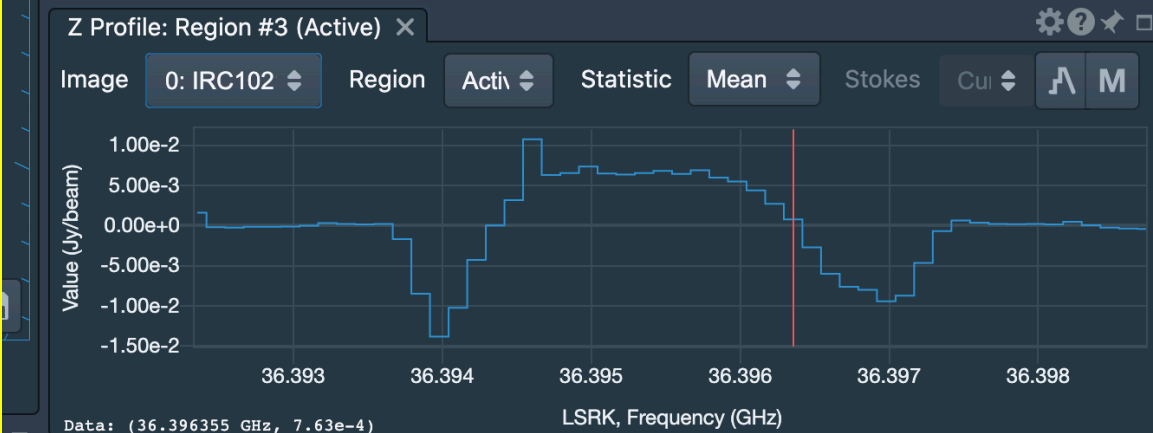
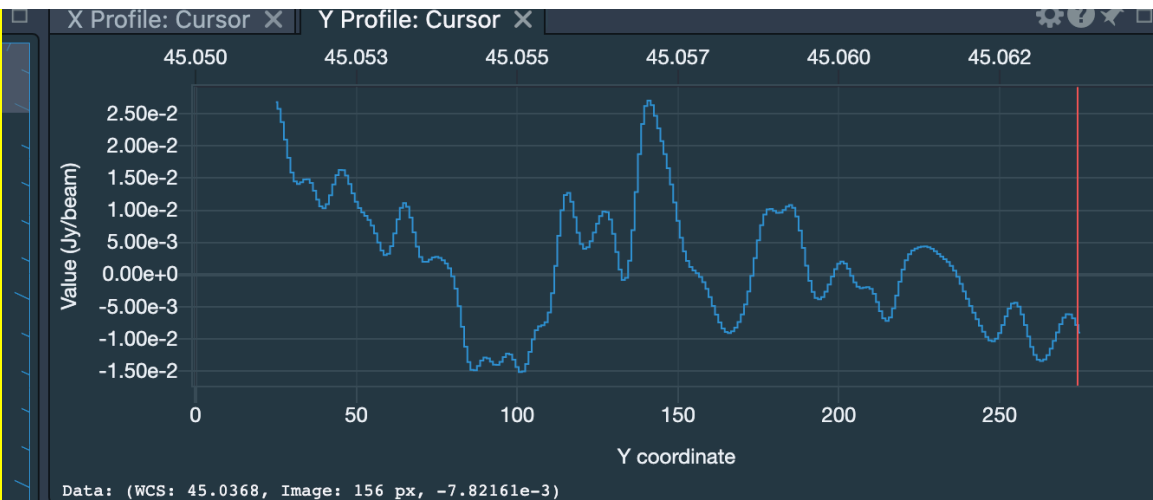


Image List X Animator X Region List X

First Prev Play Next Last Mode Frame rate 5

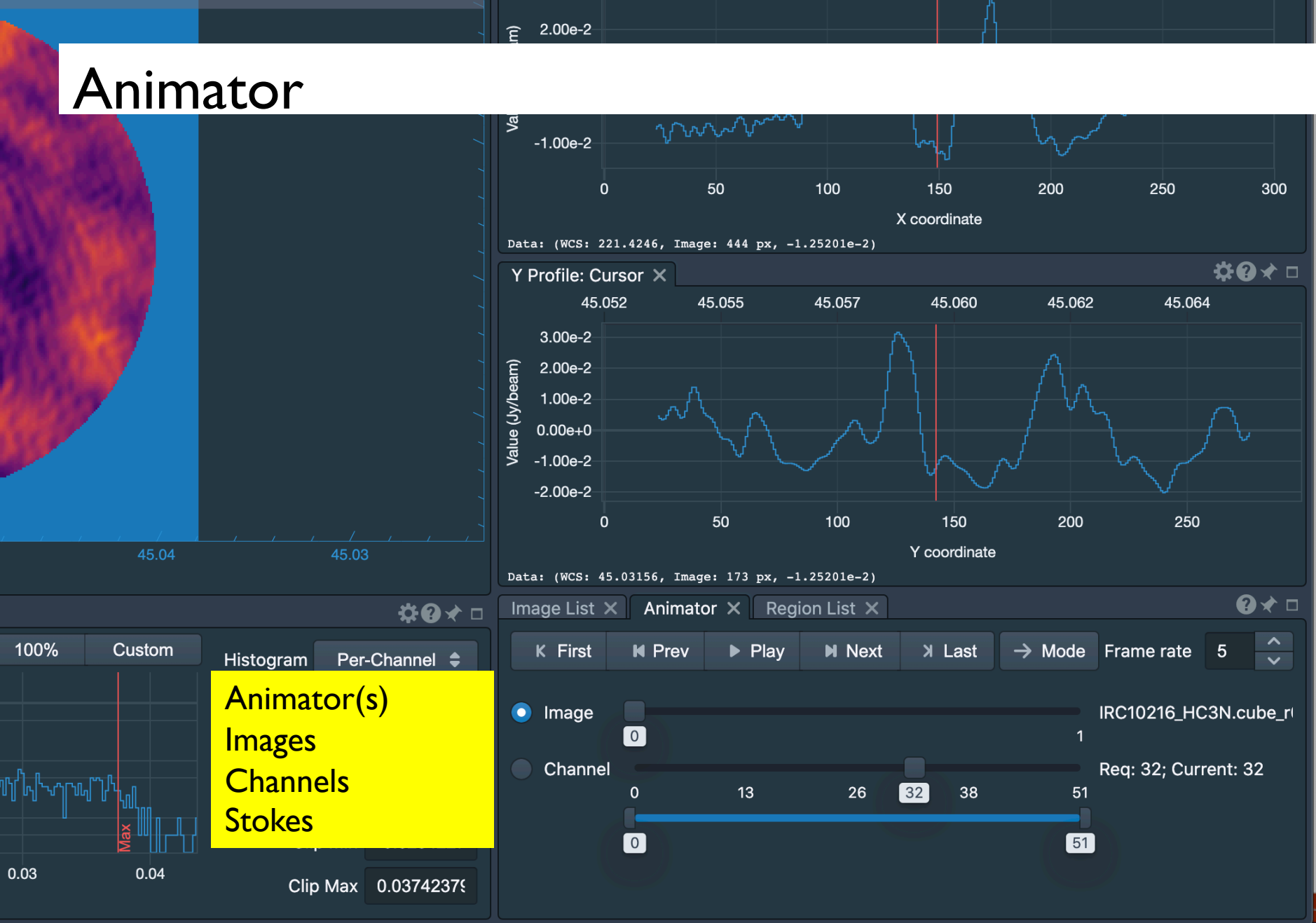
Image 0 IRC10216_HC3N.cube_r1 1

Channel 0 13 26 32 38 51 Req: 32; Current: 32

0 51

This block shows the software interface controls. At the top, there are three tabs: 'Image List', 'Animator', and 'Region List'. Below the tabs are navigation buttons: 'First', 'Prev', 'Play', 'Next', and 'Last'. There is also a 'Mode' button and a 'Frame rate' dropdown set to '5'. Below these are two main control sections. The first section is for 'Image', with a radio button selected, a slider from 0 to 1, and the text 'IRC10216_HC3N.cube_r1' and '1'. The second section is for 'Channel', with a radio button unselected, a slider from 0 to 51, and the text 'Req: 32; Current: 32'. The slider for 'Channel' has a value of 32. At the bottom, there are two more sliders, one from 0 to 51 and another from 0 to 51, with values 0 and 51 respectively.

Animator



Animator(s)
Images
Channels
Stokes

Demo

- Main Image widget
- Rendering
- Animation
- Profiles

Regions

Regions can be created (rectangle, ellipse, polygon), deleted, rotated, moved.

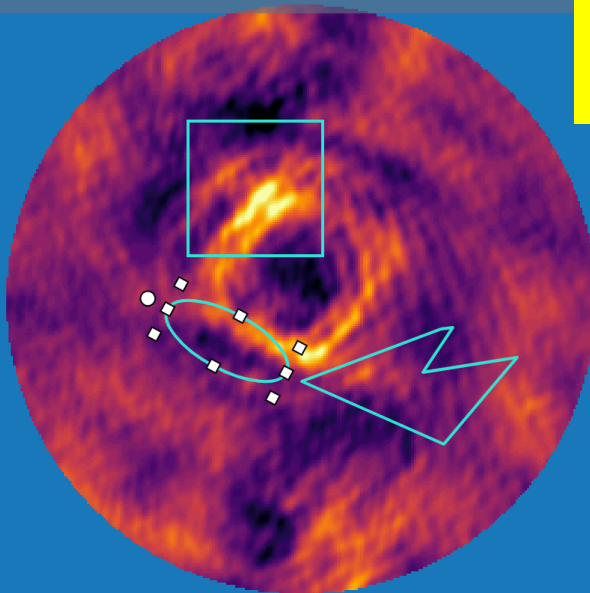
Analysis can be done on selected regions

Image/region statistics

Image/region histogram

IRC10216_HC3N.cube_r0.5.image

WCS: (221.4372, 45.06406); Image: (145, 225); Value: $-1.37588e-2$ Jy/beam ; Frequency (LSRK): 36.3964 GHz;

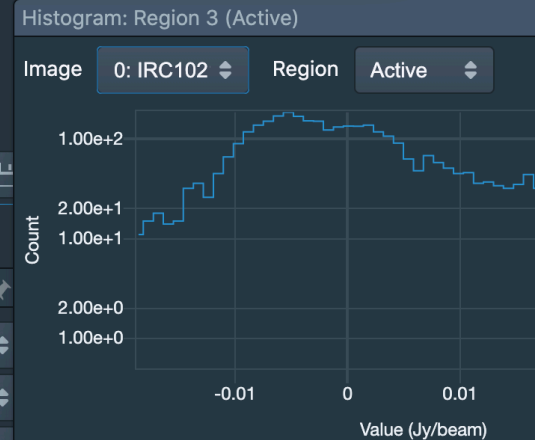


X Profile: Cursor 45.053
Y Profile: Cursor 45.055 45.058

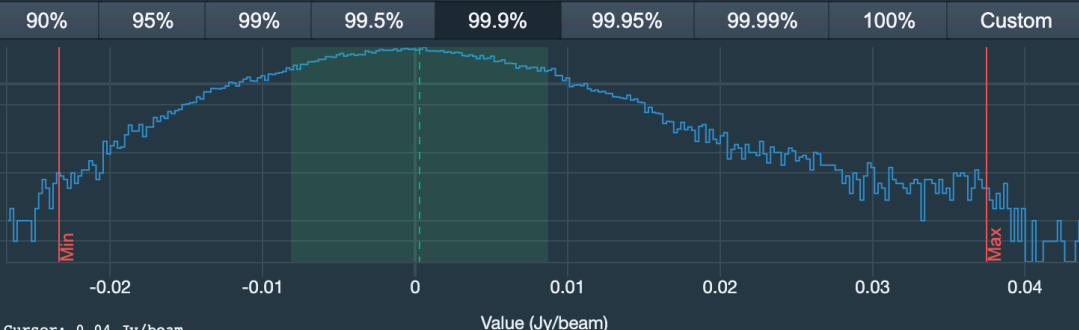
Statistics: Region 3 (Active)

Statistic	Value
NumPixels	1128 pixel(s)
Sum	$8.6101e-1$ Jy/beam
FluxDensity	$2.3510e-2$ Jy
Mean	$7.6331e-4$ Jy/beam
StdDev	$1.1052e-2$ Jy/beam
Min	$-1.8659e-2$ Jy/beam
Max	$3.2403e-2$ Jy/beam

Z Profile: Region #3 (Active)
Image: 0: IRC102 Region: Active



Render Configuration



Histogram Per-Channel
Scaling Linear
Color map
Invert color map
Clip Min -0.0234227
Clip Max 0.0374237

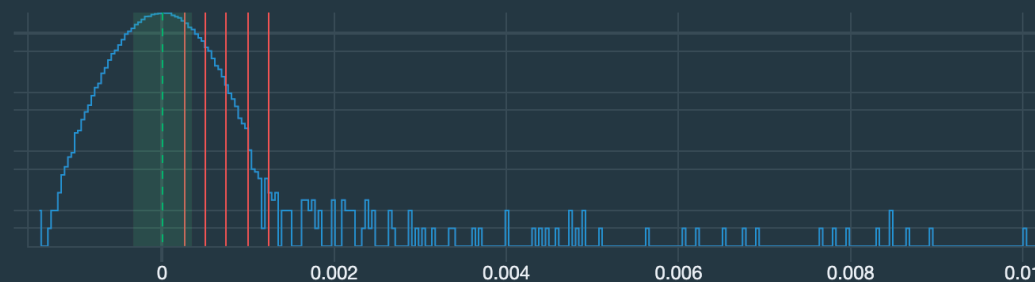
Channel 0 13 26

Contours

Contour Configuration

Data Source IRC10216.36GHzcont.image.fits

Levels Configuration Styling

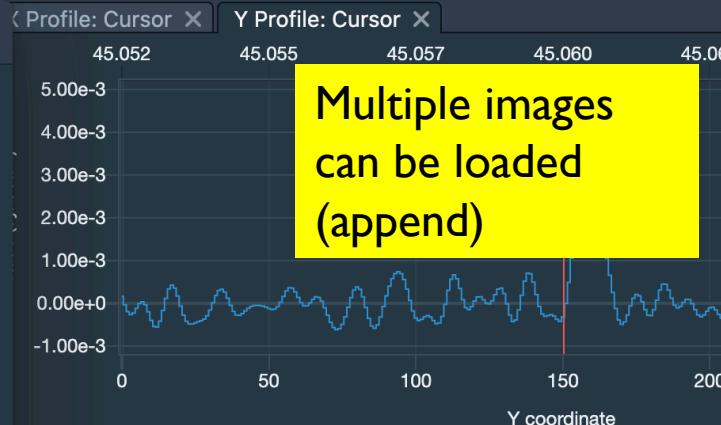


Generator percentages-ref.value **Generate**

Parameters Reference 1.234e-3 N 5

Upper (%) 100 Lower (%) 20

Levels 2.47e-4 x 4.93e-4 x 7.40e-4 x 9.87e-4 x 1.23e-3 x



data: (WCS: 45.09009, Image: 174 px, -3.13118e-4)

	Image	Layers	Matching	Channel	Stok
0	IRC10216_HC3N.cube_1	R	XY Z	32	0
1	IRC10216.36GHzcont	R C	XY	0	0

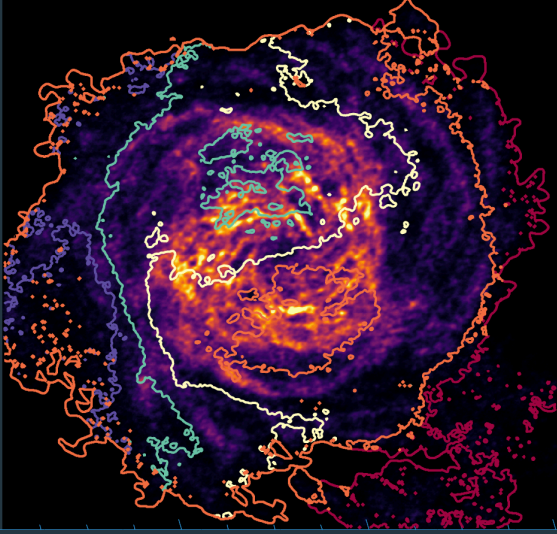
Contour overlay:
Create contours in various ways:
percentage, min max, scaling, direct
input, etc. The contour levels are
shown on an image histogram
Styling allow color map as well as
constant color

Match the coordinates for
multiple images in the image list.
This can be done spatially and
spectrally
Set reference image
Set matched images
Also: delete images from list

Apply Close

Contours

GC_628_NA_MOM0_THINGS.fits
WCS: (138.555, -45.5199); Image: (507, 962); Value: 0.0 "JY/B*M/S"



Galactic longitude

Contour Configuration

Data Source: NGC_628_NA_MOM0_THINGS.fits

Levels: Configuration Styling

Thickness: 1

Dashes: NegativeOnly

Color Mode: Color-mapped

Color Map: [Color bar]

Bias: 0

Contrast: 1

Color: [Green swatch]

Buttons: Clear Apply Close

Stokes

el	Stokes
0	0
0	0

Slider Configuration

90% 95% 99% 99.5% 99.9% 99.95% 99.99% 100% Custom

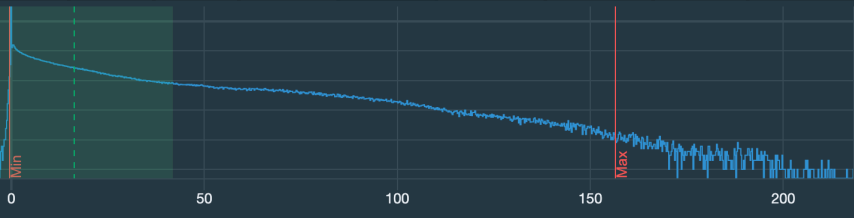
Scaling: Linear

Color map: [Color bar]

Invert color map: [Off]

Clip Min: -0.5277500

Clip Max: 156.32054



Value ("JY/B*M/S")

Image List

Image	Layers	Matching	Channel	Stokes
0 NGC_628_NA_MOM0_	R	XY	0	0
1 NGC_628_NA_MOM1_T	R C	XY	0	0

Demo

- Regions
- Statistics
- Histogram
- WCS matching
- Blinking
- Contours

Spectral line labeling

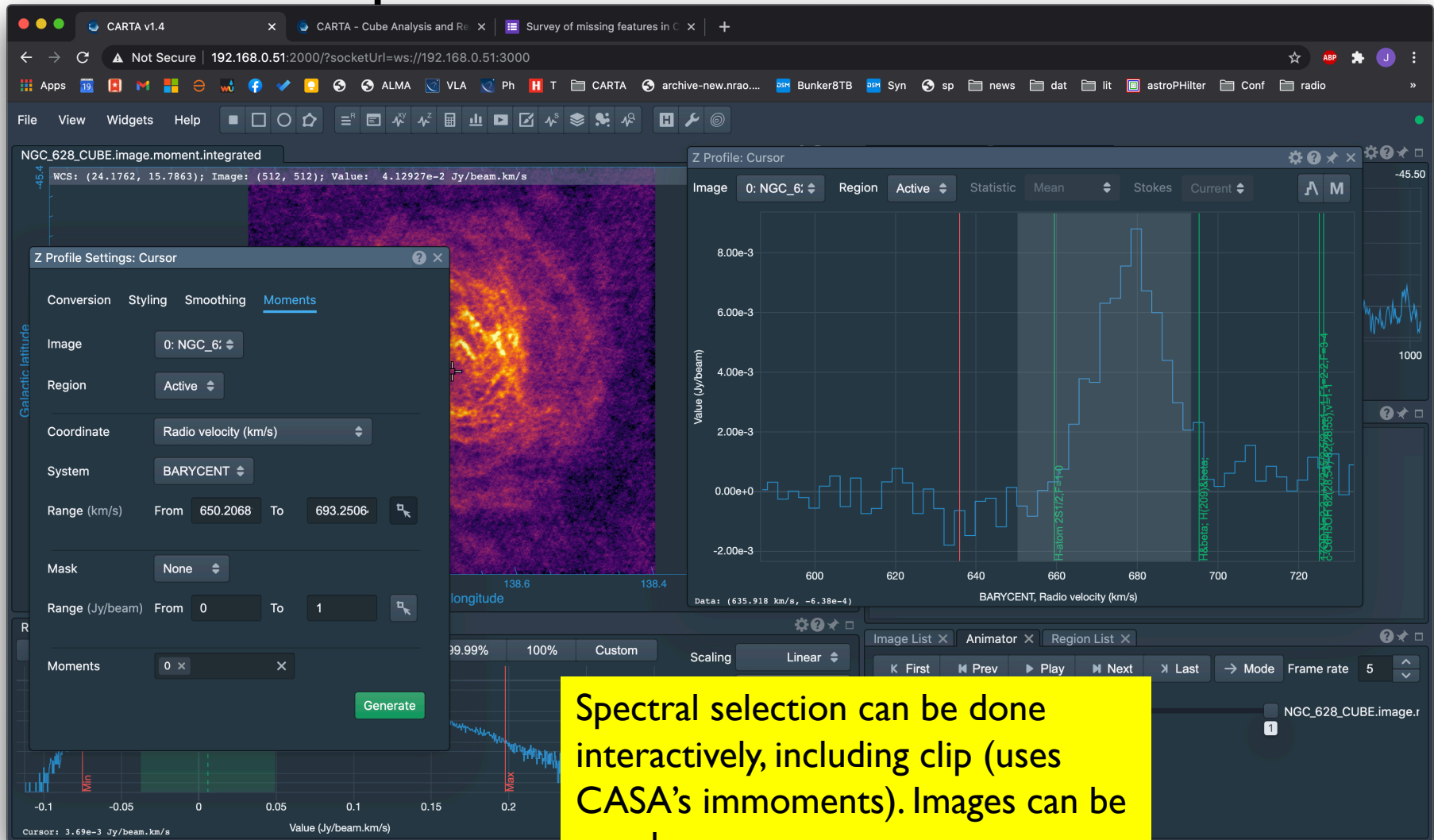
The screenshot displays the CARTA v1.4 software interface. The main window shows a spectral line query for the image NGC_628_CUBE.image. The query is set for a range from 1410 to 1430 MHz. The 'Spectral Line Query' table lists 194 entries, with 194 lines selected. The table columns are Species, Chemical Name, Shifted Frequency, Rest Frequency, and Rest F. The 'Z Profile' plot shows the value (Jy/beam) versus BARYCENT, Radio velocity (km/s). The plot has a blue histogram and several vertical lines indicating detected spectral lines. The 'Spectral Profiler' panel at the bottom shows the current channel (38) and various settings like 'Per-Channel', 'Linear', 'Invert color map', 'Clip Min', and 'Clip Max'.

Range	From	To	MHz	Intensity Limit
1	Species	Display	Description	
2	Chemical Name	Common chemical name for species		
3	Shifted Frequency	Shifted frequency according to the input veloc...		
4	Rest Frequency	Frequency at the rest frame		
5	Rest Frequency Error	Frequency error at the rest frame		

Species	Chemical Name	Shifted Frequency	Rest Frequency	Rest F
38	ND3	Ammonia	1412.349250434582	
39	17OD	Hydroxyl radical	1412.4620019357167	1415.57500
40	H2SO4	Sulfuric acid	1412.4762704885152	1415.58930
41	15N17O	Nitric oxide	1412.8162212534407	1415.93000
42	NH2CH2CH2OHv26...	Aminoethanol	1412.9908364100652	1416.10500
43	CH3CH2CHO	Propanal	1413.2223262177044	1416.33700
44	ND3	Ammonia	1413.367805588195	
45	N17O	Nitric oxide	1413.3904556685115	1416.50550
46	ND3	Ammonia	1413.5397266824032	
47	ND3	Ammonia	1413.6070782428155	1416.72260

Based on splatalogue, select line strength, frequency range and redshift

Moment maps



Spectral selection can be done interactively, including clip (uses CASA's immoments). Images can be saved

Demo

- Spectral Smoothing
- Spectral labelling
- Moment maps

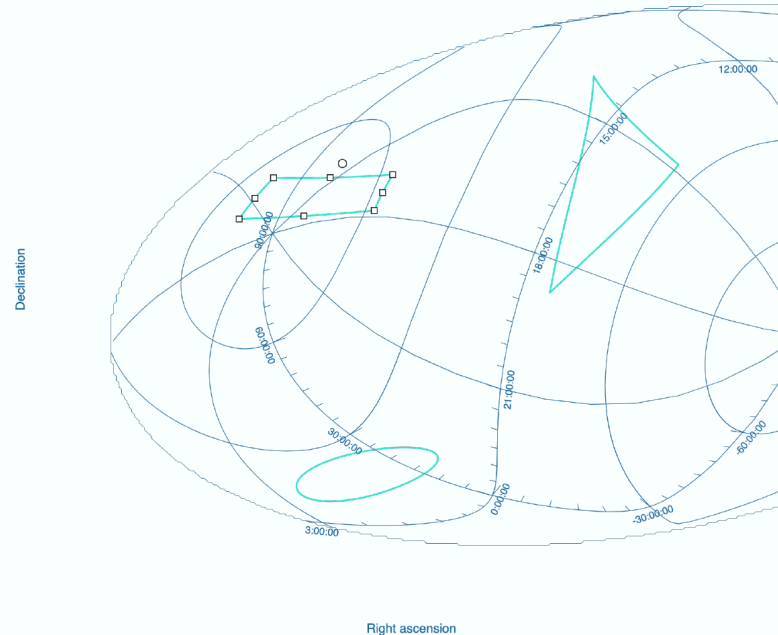
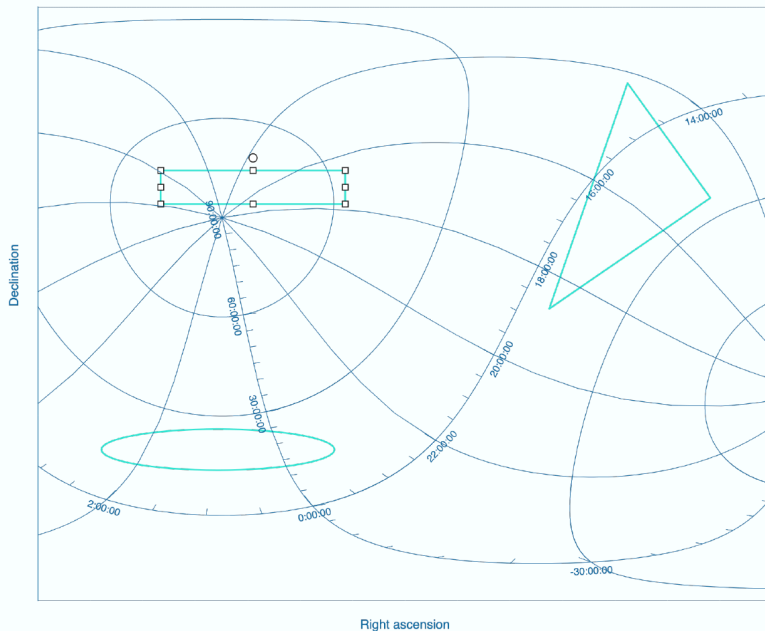
CARTA

Projection handling:

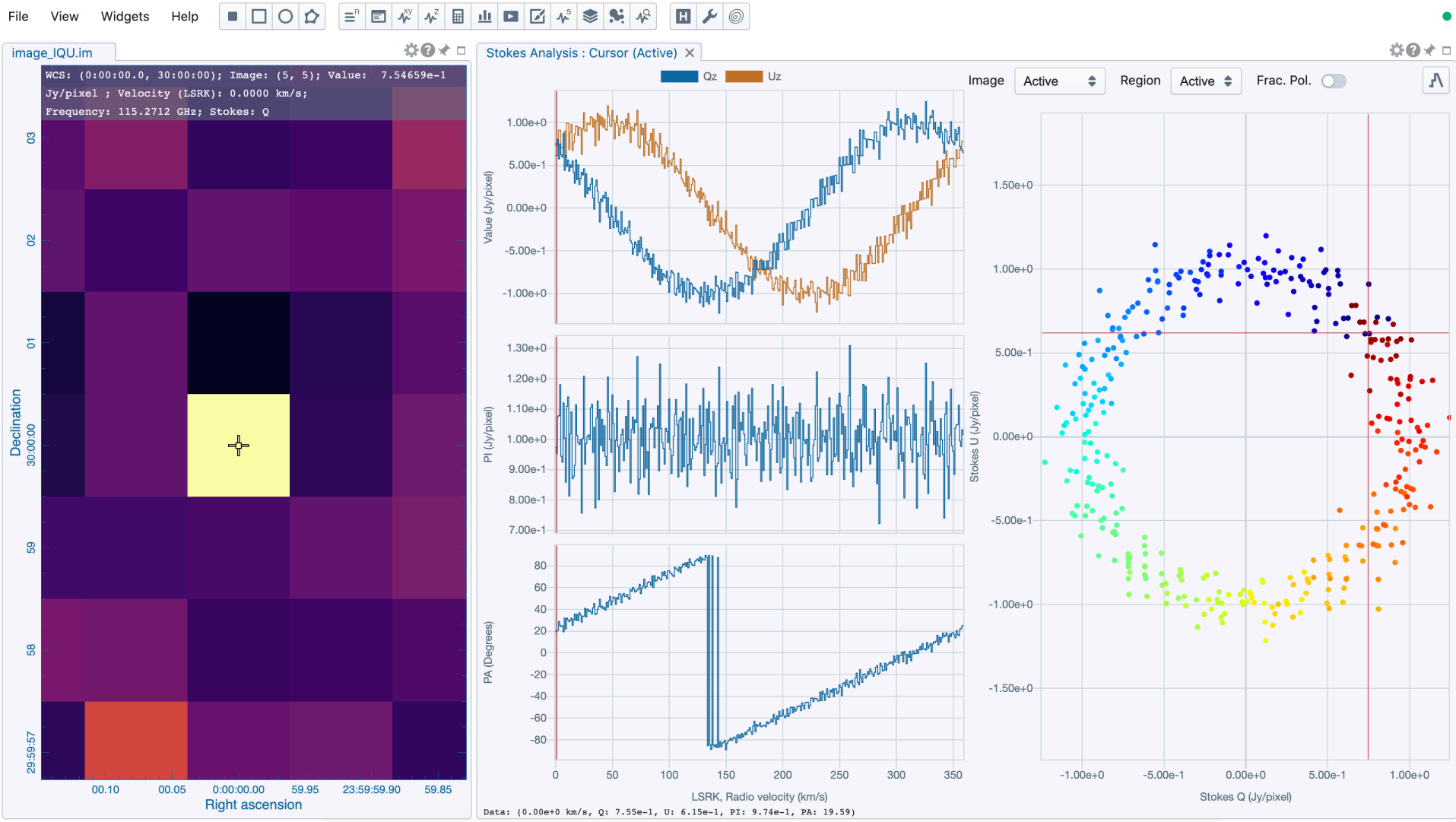
To avoid regridding, WCS matching shifts and rotates the image to the master image
This produces a small error for large fields, only visible in blinking
But images are projected correctly when overlaid as contours

Spectral matching: Nearest interpolation

Regions: They project correctly when moving across the sky in different coordinate systems



CARTA – Stokes Analysis Widget

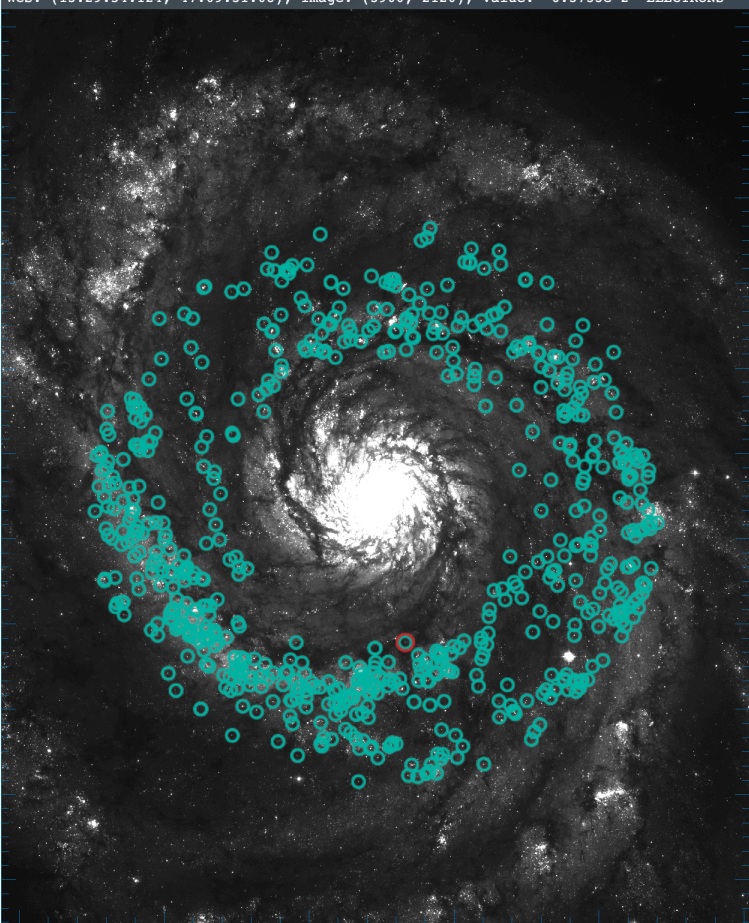


CARTA – Catalog tool

File View Widgets Help

h_m51_b_s05_drz_sci.fits X Profile: Cursor X Catalog: m51_simbad.vot

WCS: (13:29:54.124, 47:09:31.08); Image: (3900, 2120); Value: 6.3733e-2 "ELECTRONS"



File 1 Image Overlay System FK5 Color Shape Size (px) 5

Name	Unit	Displ...	Represent...	Description
TYPED_...		<input type="checkbox"/>	None	raw identifier as typ...
ANG_DI...	arcsec	<input checked="" type="checkbox"/>	None	Angular distance fro...
MAIN_ID		<input checked="" type="checkbox"/>	None	Main identifier for an ...
OTYPE_S		<input checked="" type="checkbox"/>	None	Object type
RA_d	deg	<input checked="" type="checkbox"/>	RA	Right ascension
DEC_d	deg	<input checked="" type="checkbox"/>	DEC	Declination
COO_E...	mas	<input checked="" type="checkbox"/>	None	Coordinate error maj...
COO_E...	mas	<input checked="" type="checkbox"/>	None	Coordinate error min...
COO_E...	deg	<input checked="" type="checkbox"/>	None	Coordinate error angle

TYPED_ID	ANG_DIST	MAIN_ID	OTYPE_S	RA_d	DEC_d
Click to filter	50.100	Click to filter	Click to filter	Click to filter	Click to filter
289	80.81999969482422	[HL2008] 45951	CI*	202.4964296	47.1821861
290	75.51000213623047	[HL2008] 46049	CI*	202.4936067	47.1820983
291	73.47000122070312	[HL2008] 46057	CI*	202.49292	47.1824189
292	71.69999694824219	[HL2008] 46247	CI*	202.4469908	47.1825639
293	79.5	[HL2008] 46282	CI*	202.4962004	47.1825981
294	98.5	[HL2008] 46301	CI*	202.4342196	47.1821672
295	77.76000213623047	[HL2008] 46339	CI*	202.4952392	47.1825181
296	75.01000213623047	[HL2008] 46412	CI*	202.4940187	47.1826819
297	60.77000045776367	[HL2008] 46415	CI*	202.453415	47.1824378
298	50.470001220703125	[HL2008] 46771	CI*	202.4653475	47.1815375
299	89.80999755859375	[HL2008] 46835	CI*	202.4375304	47.1830864
300	72.58999633789062	[HL2008] 46904	CI*	202.4927979	47.1827086
301	98.01000213623047	[HL2008] 47272	CI*	202.4337158	47.1831169
302	82.31999694824222	[HL2008] 47316	CI*	202.4409483	47.1832428
303	75.19000244140625	[HL2008] 47459	CI*	202.4440917	47.1835822
304	87.94000244140625	[HL2008] 47461	CI*	202.5009767	47.1833725
305	64.94999694824219	[HL2008] 47499	CI*	202.4892121	47.1831169
306	96.08000183105469	[HL2008] 47603	CI*	202.43425	47.1835939

Showing 1 to 638 of 638 filtered entries. Total 2423 entries

Max Rows 2423 Update Reset Close Plot

ALMA archive

ALMA Request Handler

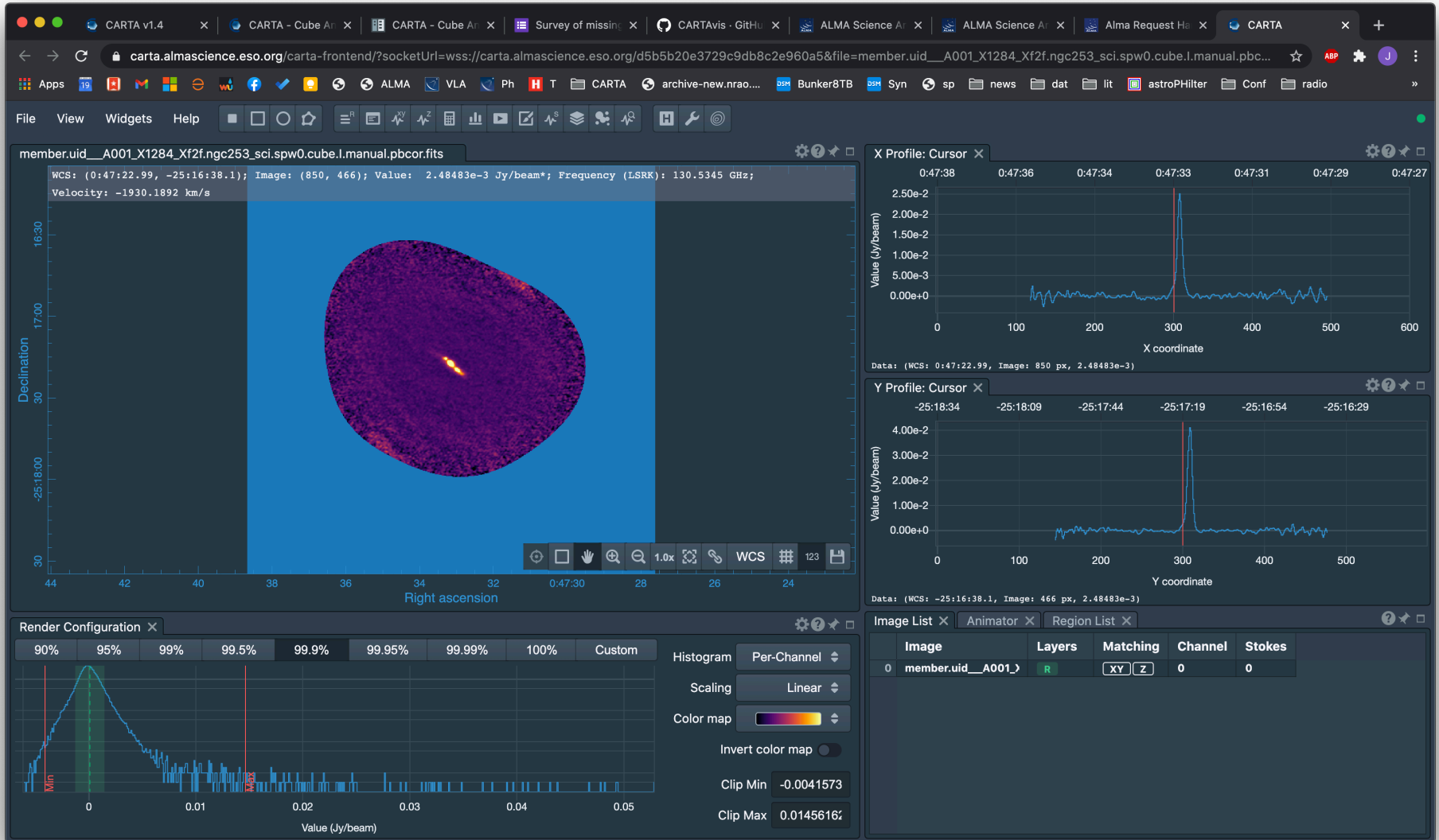
Anonymous User: Request #2154992946764 ✓
Request Title: [click to edit](#)

Download Selected

readme product auxiliary raw raw (semipass) external

Project / OUSet / Executionblock	File	Size	Accessible	Actions
Request 2154992946764		3 GiB		
Project 2017.1.00161.L				
Science Goal OUS uid://A001/X1284/Xf2d				
Group OUS uid://A001/X1284/Xf2e				
Member OUS uid://A001/X1284/Xf2f				
SB ngc253_b_04_TM1				
<input checked="" type="checkbox"/> readme	member.uid_A001_X1284_Xf2f.README.txt	3 KiB	✓	
<input checked="" type="checkbox"/> product	2017.1.00161.L_uid_A001_X1284_Xf2f_001_of_001.tar	3 GiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw0.cube.l.manual.mask.tgz	720 KiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw0.cube.l.manual.pb.fits.gz	133 MiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw0.cube.l.manual.pbcor.fits	527 MiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw1.cube.l.manual.mask.tgz	720 KiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw1.cube.l.manual.pb.fits.gz	130 MiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw1.cube.l.manual.pbcor.fits	527 MiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw2.cube.l.manual.mask.tgz	720 KiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw2.cube.l.manual.pb.fits.gz	120 MiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw2.cube.l.manual.pbcor.fits	527 MiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw3.cube.l.manual.mask.tgz	720 KiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw3.cube.l.manual.pb.fits.gz	119 MiB	✓	
<input type="checkbox"/> product	member.uid_A001_X1284_Xf2f.ngc253_sci.spw3.cube.l.manual.pbcor.fits	527 MiB	✓	
<input checked="" type="checkbox"/> auxiliary	2017.1.00161.L_uid_A001_X1284_Xf2f_auxiliary.tar	210 MiB	✓	
<input type="checkbox"/> raw	2017.1.00161.L_uid_A002_Xd10f82_Xd1a.asdm.sdm.tar	134 GiB	✓	
<input type="checkbox"/> raw	2017.1.00161.L_uid_A002_Xd12f5c_Xad8f.asdm.sdm.tar	129 GiB	✓	
Member OUS uid://A001/X1284/Xf31				
SB ngc253_b_04_7M				
<input type="checkbox"/> readme	member.uid_A001_X1284_Xf31.README.txt	3 KiB	✓	
<input type="checkbox"/> product	2017.1.00161.L_uid_A001_X1284_Xf31_001_of_001.tar	1 GiB	✓	
<input type="checkbox"/> auxiliary	2017.1.00161.L_uid_A001_X1284_Xf31_auxiliary.tar	561 MiB	✓	
<input type="checkbox"/> raw	2017.1.00161.L_uid_A002_Xc6d2f9_X3fc.asdm.sdm.tar	4 GiB	✓	

ALMA archive



CARTA

Future development

- Multi-panel view
- Channel map view
- Support additional image types (e.g. complex value, uv)
- Position-velocity map generator
- Collaborative tools (server)
- Tbd: Interactive CLEAN with CASA
- Vector field (polarization) rendering
- Volume (3D) rendering
- Profile, histogram, and image fitting tools
- Scripting interface with Python3 (ongoing)
- More ROI support
- Three-color (RGB) blender
- Ultra-efficient HDF5-IDIA format
- Distance measure tool
- Source finder
- VO support
- Enhanced Stokes image support
- Enhanced spectral line query
- Enhanced catalogue support
- Publication quality export
- Tbd: visibility (waterfall) plots

CARTA

Plan for v2.0 (spring/summer 2021)

- Support for pV image format (pV creator, however, likely in v3)
- High-resolution png for better publication quality images
- Color bar
- Multi-spectral line display compressed image support
- Complex image support
- Improvements in filebrowser
- Catalog overlay in spatially matched images
- Support individual stokes plane images for Stokes analysis widget
- Better line filtering in spectral line query
- Basic profile fitting
- Basic python scripting
- Subimage support
- Code maintenance

CARTA

Please for for your favorite feature developments:

<https://forms.gle/TEH4453GypGpXV2VA>

Survey of missing features in CARTA (as of v1.4, 2020Nov)

To help the CARTA development team making a proper set of "new" features for the new releases in the near future (1y timescale), we would like to ask for your help on identifying missing features that you think they will make CARTA "science ready" in your use cases. We will briefly describe those new features that the CARTA development team would like to implement ultimately. At the end of this survey, please identify *****up to FIVE***** features. We appreciate your kind help. :)

*** Required**

Multi-panel view
As of v1.4, images can be visualized with one single panel only. The multi-panel view will allow users to view images in a grid (eg 2x2) layout so that side-by-side comparison is possible.

Channel map view
The channel map view will allow users to view multiple channel images from an image cube in one shot. For example, channel 1 to 20 can be visualized in a 5x4 grid.

Position-velocity map generator
PV map generator will allow users to generate PV images ****interactively****. The interactivity here refers to the ability to define a PV cut and see the outcome PV image in (almost) realtime.

Server collaborative tools



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