Reviewing the WebLog

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Unfortunately, because of security features in many browsers, it may be necessary to adjust the browser settings so as to view the WebLog properly.

For this demonstration, Firefox is recommended for viewing the WebLog files because its security settings can be adjusted relatively easily. In Firefox, type "about:config" in the address bar. (This may display a warning page, but click continue to exit the page.)

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accessibility.AOM.enabled	default	boolean	false	
accessibility.accesskeycausesactivation	default	boolean	true	
accessibility.blockautorefresh	default	boolean	false	
accessibility.browsewithcaret	default	boolean	false	
accessibility.browsewithcaret_shortcut.enabled	default	boolean	true	
accessibility.force_disabled	default	integer	0	
accessibility.ipc_architecture.enabled	default	boolean	true	
accessibility.loadedInLastSession	default	boolean	false	
accessibility.mouse_focuses_formcontrol	default	boolean	false	
accessibility.tabfocus	default	integer	7	
accessibility.tabfocus_applies_to_xul	default	boolean	false	
accessibility.typeaheadfind	default	boolean	false	
accessibility.typeaheadfind.autostart	default	boolean	true	
accessibility.typeaheadfind.casesensitive	default	integer	0	
accessibility.typeaheadfind.enablesound	default	boolean	true	
accessibility.typeaheadfind.enabletimeout	default	boolean	true	
accessibility.typeaheadfind.flashBar	user set	integer	0	
accessibility.typeaheadfind.linksonly	default	boolean	false	
accessibility.typeaheadfind.matchesCountLimit	default	integer	1000	
accessibility.typeaheadfind.prefillwithselection	default	boolean	true	
accessibility.typeaheadfind.soundURL	default	string	beep	
accessibility.typeaheadfind.startlinksonly	default	boolean	false	
accessibility.typeaheadfind.timeout	default	integer	5000	
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accessibility.usetexttospeech	default	string		
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advanced.mailftp	default	boolean	false	
alerts.disableSlidingEffect	default	boolean	false	
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On this page, search for the "privacy.file_unique_origin" preference and set it to False. After this, restart Firefox for the fix to take effect.

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accessibility.loadedInLastSession	default	boolean	false		
accessibility.mouse_focuses_formcontrol	default	boolean	false		
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accessibility.typeaheadfind.autostart	default	boolean	true		
accessibility.typeaheadfind.casesensitive	default	integer	0		
accessibility.typeaheadfind.enablesound	default	boolean	true		
accessibility.typeaheadfind.enabletimeout	default	boolean	true		
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accessibility.typeaheadfind.matchesCountLimit	default	integer	1000		
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alerts.showFavicons	default	boolean	false		
app.feedback.baseURL	default	string	https://input.mozilla.org/%LOCALE%/feedback/%APP%/%VERSION%/		
		5			

The qa directory contains the following files:

member.uid ____A001_X135b_X6b.hifa_calimage.weblog.tgz member.uid ____A001_X135b_X6b.qa2_report.html member.uid ____A001_X135b_X6b.qa2_report.pdf uid ____A002_Xd98580_X354.qa0_report.pdf

Other data that are pipeline-calibrated and pipeline-imaged will look similar.

Data from older cycles will have been manually-calibrated. The quality assurance data from these cycles will be in a series of PNG files and a PDF. QA stands for quality assurance. ALMA has four phases of quality assurance:

QA0 Simple quality checks performed at the observatory as soon as the data are acquired

QA1 Long-term monitoring of the performance of the observatory (not specific to any project)

QA2 A complete quality assessment performed on the data after completely calibrating and imaging the data

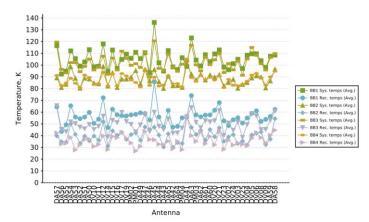
QA3 Re-assessment of data after they are delivered to users triggered when someone discovers a previously-unidentified problem

The QA0 PDF provides a summary of comments from the astronomer who acquired the data and some simple diagnostic plots.

QA0 Report

Project Code	2018.1.01131.5					
Session	uid://A001/X135b/X6b					
SchedBlock uid://A001/X135b/X5d (Z_CMa_a_06_TM2)						
ExecBlock	uid://A002/Xd98580/X354 🖌 Pass					
Sources # Antennas	J05384405, J07301141, Z_CMa 43 (111.6 % for Cycle 6)					
rray 12 [m]						
Baselines						
Band	ALMA_RB_06					
Weather	PWV 1.97 mm; Wind 7.49 m/s; Humidity 73.54	%; Pressure 463.25 hPa				
Atmosphere	Tsys (Min/Avg/Max) : 77.6/89.7/108.1					
	Trec (Min/Avg/Max) : 26.5/46.0/88.0					
Final QA0 comment	Pending flux cal observations. Pointing errors of antenna types	f PM antennas a bit higher than the other				
	Times on sources					
DBSERVE_TARGET (Z	_CMa)	5.03min (5.03min expected)				
CALIBRATE_ATMOSPH	IERE (Z_CMa, J0538-4405, J0730-1141)	1.32min				
CALIBRATE_BANDPAS	S (J0538-4405)	5.05min				
CALIBRATE_FLUX (J05	38-4405)	5.05min				
CALIBRATE_PHASE (JO	0730-1141)	1.02min				
CALIBRATE_POINTING	(J0538-4405, J0730-1141)	4.07min				
CALIBRATE_WVR (Z_C	Ma, J0538-4405, J0730-1141)	11.45min				



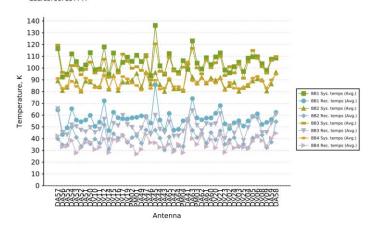


The plots of T_{sys} or system temperature (under "atmospheric calibrations") should be checked for any antennas that are outliers.

QA0 Report

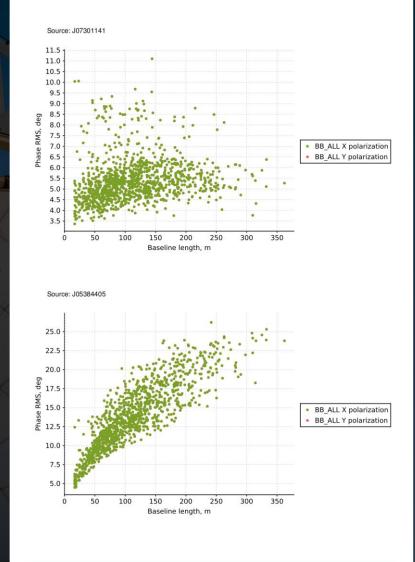
Project Code Session SchedBlock ExecBlock	2018.1.01131.5 uid://A001/X135b/X6b uid://A001/X135b/X5d (Z_CMa_a_06_TM2) uid://A002/Xd98580/X354				
Sources # Antennas Array Baselines Band Weather Atmosphere	J05384405, J07301141, Z_CMa 43 (111.6 % for Cycle 6) 12 [m] 15m – 360m ALMA, RB 06 PWV I.97 mm; Wind 7.49 m/s; Humidity 73.54 %; Pressure 463.25 hPa Tsys (Min/Avg/Max) : 27.5/89.7/108.1 Trec (Min/Avg/Max) : 26.5/46.0/88.0				
Final QA0 comment	Pending flux cal observations. Pointing errors of antenna types	f PM antennas a bit higher than the other			
	Times on sources				
OBSERVE_TARGET (Z_	_CMa)	5.03min (5.03min expected)			
CALIBRATE_ATMOSPH	ERE (Z_CMa, J0538-4405, J0730-1141)	1.32min			
CALIBRATE_BANDPAS	S (J0538-4405)	5.05min			
CALIBRATE_FLUX (J05	38-4405)	5.05min			
CALIBRATE_PHASE (JO	730-1141)	1.02min			
CALIBRATE_POINTING	(J0538-4405, J0730-1141)	4.07min			
CALIBRATE_WVR (Z_C	Ma, J0538-4405, J0730-1141)	11.45min			

Source: J07301141



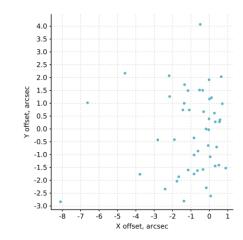
Atmosphere calibrat

Any outliers in the plots of phase RMS versus baseline length could be indicative of antennas or baselines that were not producing usable data. These data will need to be checked later.

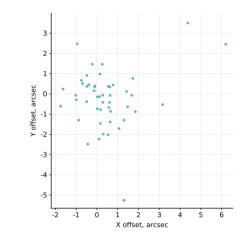


Pointing offsets

Pointing offsets are usually not a severe problem, but it is useful to be aware of any significant outliers. Source: J07301141

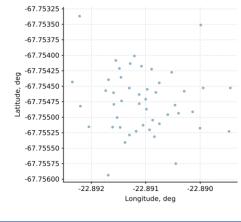


Source: J05384405

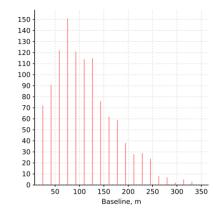


Antenna positions

The baseline distribution is useful to understand what the angular resolution and maximum recoverable scale will be like when the final images are made.



Baseline distribution



Comments and Attachment

ExecBlock: uid://A002/Xd98580/X354

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Attachments: aoscheck_phase_solution.png, aoscheck_amplitude.png, aoscheck_phase_solution.png, aoscheck_amplitude.png

The QA2 PDF includes some comments on the data processing and summary information about the observations.

The last few pages of the document include standard instructions sent to all users.

QA2 Report **Project informatio** Name A molecular line survey of FU Ori Outflows Code 2018.1.01131.5 Dary Ruíz-Rodríguez Organization Chester F. Carlson Center for Imaging, Rochester Institute of Te Co-ls L. Cieza, U. Gorti, J. Kastner, D. Principe, J. Williams **ObsUnitSet information** Name Member OUS (Z CMa) QA2 Status Pass Member OUS Status ID uid://A001/X135b/X6b SchedBlock name Z CMa a 06 TM2 SchedBlock UID uid://A001/X135b/X5d Array TM₂ Mode Standard Band ALMA RB 06 Repr.Freq. (sky) 218.48 [GHz] Spectral setup FDM Z CMa Sources Other SBs in this Group OUS (Member OUS Z CMa b 06 7M (uid://A001/X135b/X6d), Z CMa b 06 TM1 (uid://A001/X135b/X69) Status ID in brackets): Execution count 1.00 of 1 expected **Final QA2 comment** CASA version: 5.4.0-70

Reduction mode: Pipeline calibration and imaging, pipeline version 42254M (CASA54-P1-B)

Calibration issues: Antenna DV06 was shadowed during the bandpass scan and was therefore flagged for part of that scan. Antenna DA57 showed low gain and showed high scatter in the amplitude versus frequency plots in stage 17, hit_applycal, therefore it was manually flagged. The pipeline issued lots of flagging in stage 12, hit_abandpassflag, for baselines and timestamps that had outlier amplitudes in spectral window 45. Similarly, the pipeline issued many flags for baselines in all spectral window 45. Similarly, the pipeline issued many flags for baselines in all spectral window because of outlier amplitudes in stage 14, hita_gfluxscaleflag. The bandpass scan shows high scatter in amplitude versus time plots in stage 17, hit_applycal, likely due to the low elevation of the calibrator and weather conditions, however the solutions appear adequate for good calibration. Additionally, the bandpass calibrator appears slightly resolved in the residual images of stage 19, hif_makeimages, however the larger scale emission does not appear to effect calibration. Overall, the data appear well calibrated and the overall flagging rate is quite low.

Imaging issues: The PI may wish to manually identify the continuum and re-image since the pipeline identified continuum appears to have been conservative for some spectral windows.

General info: The continuum was identified by the pipeline although it is recommended that the PI do a more careful identification of the continuum. The continuum was subtracted from all the spectral windows. Self-calibration was not performed. All pipeline products only have a shallow clean, the PI may want to do a deeper clean to improve the images.

This is a continuum project, thus QA2 was performed on the Aggregate Continuum. Both the beam size and the RMS meet the PI requested performance parameters. Therefore, this scheduling block has been deemed a QA2 PASS.

Aggregate Continuum -Image name: uid___A001_X135b_X6b.s33_0.Z_CMa_sci.spw25_27_29_31_33_35_37_39_41_43_45.cont.l.iter1.image Robust = 0.5 Beam size = 1.26 x 0.858 arcsec RMS = 0.17 mJy/beam over 2.42 GHz

For additional information on the calibration and imaging pipeline products please see the Knowledgebase article: https://help.almascience.org/index.php?/Knowledgebase/Article//View/375/ The WebLog contains most of the useful diagnostic information from the QA2 process.

This is produced by the ALMA pipeline as the data are being calibrated and imaged.

The calibration part of the pipeline will calibrate the following in the visibility data:

- Phase versus frequency
- Amplitude versus frequency
- Phase versus time
- Amplitude versus time

The imaging pipeline produces the following:

- Image cubes
- Continuum flux images for each spw
- Aggregate continuum image for all spws

The WebLog is typically distributed as a set of html files in a tgz file that needs to be uncompressed before the files can be viewed.

The overview page is within the resulting directory at html/index.html.

The main index (or Home) page provides an overview of the observations. The page has three tabs at the top. The Home tab is currently displayed. Clicking on a measurement set in the bottom table leads to a page with more detailed information about those data.

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Home By Topic By Task				2018.1.01131.S
Observation Overview		Pipeline Summa	ary	
Project	uid://A001/X12ee/X3	Pipeline Version	42254M (Pipeline-CASA54-P1-B) (documentation)	
Principal Investigator	daryalexia	CASA Version	5.4.0-70 (environment)	
OUS Status Entity id	uid://A001/X135b/X6b	Pipeline Start	2019-04-02 19:54:13 UTC	
Observation Start	2019-03-14 01:01:10 UTC	Execution Duration	8:22:29	
Observation End	2019-03-14 01:18:52 UTC			

Observation Summary

			Time (UTC)			Baseline Length			
Measurement Set	Receivers	Num Antennas	Start	End	On Source	Min	Max	RMS	Size
Observing Unit Set Status: uid://A001/X135b/X6b Scheduling Block ID: uid://A001/X135b/X5d									
Session_1									
uidA002_Xd98580_X354.ms	ALMA Band 6	48	2019-03-14 01:01:10	2019-03-14 01:18:52	0:05:03	15.0 m	360.6 m	128.3 m	16.1 GB
uidA002_Xd98580_X354_target.ms	ALMA Band 6	48	2019-03-14 01:13:31	2019-03-14 01:13:31	0:05:02	15.0 m	360.6 m	128.3 m	5.8 GB

The overview page lists a lot of basic information about the observations themselves.

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	Spatial Setup			Spectral Setup		
	Science Targets	'Z_CMa'		All Bands	'ALMA Band 6' and 'WVR'	
	Calibrators	'J0538-4405' and 'J0730-1141'		Science Bands	'ALMA Band 6'	
	Antenna Setup			Sky Setup		
	Min Baseline	15.	m	Min Elevation	53.77 degrees	
	Max Baseline	36	6 m	Max Elevation	75.88 degrees	
	Number of Baselines	11:	3			
	Number of Antennas	48				
	Weather			PWV		
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The listobs output button displays a text file with summary information about the sequence of observations, the fields, the spectral windows, and the antennas. Versions of this file can also be created using the listobs command in CASA.

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	MeasurementSet Name: /home/dared/opt/dared.20180tT/mnt/dataproc/2018.1.01131.S_2019_04_02719_32_25.386/SOUS_uidA001_X135b_X60/60US_uidA001_X135b_X68/MOUS_UidA001_X135b_X68/MOUS_UI
	Xd98580_X354.ms MS Version 2
	Observer: daryalexia Project: uid://A001/X12ee/X3 Observer: daryalexia Project: uid://A001/X12ee/X3
	Data records: 22840820 Total elapsed time = 1092.77 seconds
	Observed from 14-Mar-2019/01:01:10.3 to 14-Mar-2019/01:19:23.0 (UTC)
	ObservationID = 0 ArrayID = 0
	Date Timerange (UTC) Scan FldId FieldName nRows SpwIds Average Interval(s) ScanIntent 14-Mar-2019/01:01:10.3 - 01:03:13.8 1 0 J0538-4405 1919472 [0,1,2,3,4,5,6,7,8,9,10,11,12] [0.016, 0.016, 0.016, 0.016, 1.15, 2.02, 1.01, 2.02, 1.01, 2.02, 1.01, 2.02, 1.01] [CALIBRATE_POI
	1 4 - MAI - 2019/101103 0.103133. 0 1 0 J0538-4405 19194/2 [0,12,3,4,5,6,7,6,9,10,11,12] [0.016, 0.016, 0.016, 0.016, 1.15, 2.02, 1.01, 2.02,
	1103:133.1 - 01:03:59.6 2 0 J0538-4405 343248 [4,13,14,15,16,17,18,19,20,21,22,23,24] [1.15, 0.016, 0.016, 0.016, 0.016, 0.576,
	6] [CALIBRATE_ATMOSPHERE#ANBIENT, CALIBRATE_ATMOSPHERE#OFT, CALIBRATE_MOR#AMBIENT, CALIBRATE_WOR#AMBIENT, CALIBRATE_WOR#OFF_SOURCE]
	01:04:04.2 - 01:09:07.0 3 0 J0538-4405 8168976 [4,13,14,15,16,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46] [1.15, 0.016,
	6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01] [CALIBRATE_BANDPASSEON_SOURCE, CALIBRATE_FLUXEON_SOURCE, CALIBRATE_WVREON_SOURCE]
	01:09:42.9 - 01:11:45.7 4 1 J0730-1141 1919328 [0,1,2,3,4,5,6,7,8,9,10,11,12] [0.016, 0.016, 0.016, 0.016, 1.15, 2.02, 1.01, 2.02, 1.01, 2.02, 1.01, 2.02, 1.01] [CALIBRATE_POI NTINGHON_SOURCE, CALIBRATE_WXRHON_SOURCE]
	01:12:10.0 - 01:12:17.6 5 1 J0730-1141 343248 [4,13,14,15,16,17,18,19,20,21,22,23,24] [1.15, 0.016, 0.016, 0.016, 0.016, 0.576, 0
	6] [CALIBRATE_ATMOSPHERE#ANBIENT, CALIBRATE_ATMOSPHERE#HOT, CALIBRATE_MOR#AMBIENT, CALIBRATE_WOR#AMBIENT, CALIBRATE_WOR#HOT, CALIBRATE_WOR#OFF_SOURCE]
	01:12:23.0 - 01:12:54.3 6 1 J0730-1141 816936 [4,13,14,15,16,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46] [1.15, 0.016, 0
	6.05, 1.01, 6.05,
	01:13:08.0 - 01:13:25.2 7 2 Z_CMa 343248 [4,13,14,15,16,17,18,19,20,21,22,23,24] [1.15, 0.016, 0.016, 0.016, 0.016, 0.576
	01:113:11.0 - 01:116:33.8 8 2 Z_CNa 816976 [4,13;14;15;16;25;26;27;28;29;30;31;32;33;34;35;36;37;38;39;40;41;42;43;44;34;44;46] [1:15, 0.016,
	6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01] [OBSERVE_TARGET=0N_SOURCE]
	01:18:52.4 - 01:19:23.0 9 1 J0730-1141 816888 [4,13,14,15,16,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46] [1.15, 0.016, 0
	6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01, 6.05, 1.01] [CALIBRATE_PHASE#ON_SOURCE,CALIBRATE_WVR#ON_SOURCE]
	(nRows = Total number of rows per scan) Fields: 3
	ID Code Name RA Decl Epoch SrcId nRows
	0 none J0538-4405 05:38:50.361558 -44.05.08.93891 ICRS 0 10431696
	1 none J0730-1141 07:30:19.112473 -11.41.12.60058 ICRS 1 3896400
	2 none Z_CMA 07:03:43.158465 -11.33.06.18271 ICRS 2 8512224
	Spectral Windows: (47 unique spectral windows and 2 unique polarization setups)

The intent versus time plot shows the sequence of the observations as well as the purpose of those observations. Some observations have multiple purposes.

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The field versus time plot is similar except that the y-axis indicates the field ID. In this case, 0 is field for the bandpass calibrator, 1 is the field for the phase calibrator, and 2 is the field for the science target (Z CMa).

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The antenna setup page shows the location of the antennas and the resulting uv coverage (which is related to the final angular resolution and maximum recoverable scale of the data).

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	Accesses Relations for Add Add 32, Relation 500, T144 million -color Original Original -color Original Original		
	Antenna Position	Antenna Position	UV Coverage
	Plot antenna latitude vs antenna longitude	Polar-logarithmic plot of antenna positions.	UV coverage plot for TARGET field Z_CMa (#2), spw 33.

Antenna Details

				Offset from Array Centre	
ID	Name	Pad	Diameter	Longitude	Latitude
0	DA41	A058	12.0	12.7 m	-827.0 m
1	DA42	A023	12.0	-1.3 m	-648.2 m
2	DA43	A035	12.0	32.0 m	-706.8 m
3	DA44	A001	12.0	24.2 m	-693.4 m
4	DA45	A036	12.0	42.7 m	-727.0 m
c	DA46	4005	12.0	26.4 m	605 5 m

The sky setup shows the elevation and azimuth of the fields during the observations. The beam for sources observed at low elevations (<45°) could appear elongated. Calibration problems may occur if the phase calibrator and science target are too far apart (>10°).

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	Elevation vs. azimuth	Elevation vs. time	UV Coverage	
			UV coverage plot for TARGET field Z_CMa (#2), spw 33.	

The weather and PWV plots are useful for understanding the observing conditions. High humidity could affect the S/N of the data. Sudden changes in the weather conditions could cause sudden changes in the phases and amplitudes.

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	e 557.9 D 557.8		9 -4.4		
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	Min Baseline	·····	0 	53.77 degrees	
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The weather and PWV plots are useful for understanding the observing conditions. High humidity could affect the S/N of the data. Sudden changes in the weather conditions could cause sudden changes in the phases and amplitudes.

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The By Topic page lists warnings that were produced by the pipeline along with grades for those warnings and tables showing the amount of data flagged for each antenna in each field.

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Antennas that were flagged 100% are not usable. Antennas flagged >20% may need to be examined more carefully.

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33	4.17	4.17	7 4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17		4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17			
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27	5.33	5.33	3 5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	100.00	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	57.83	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	5.33	1		
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Having said that, some of the data in some specific fields are not used by the pipeline and are flagged, so a large fraction (>20%) of data for one field could be flagged. Also, ACA data tend to be affected by shadowing, which could lead to high flagging percentages.

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The By Task page lists each of the calibration and imaging steps that were applied in the pipeline. Not all of these steps need to be checked, but the ones listed on the following pages have the most useful information.

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Task	QA Score		Duration
1. hifa_importdata: Register measurement sets with the pipeline		1.00	0:07:08
2. hifa_flagdata: ALMA deterministic flagging		1.00	0:28:54
3. hifa_fluxcalflag: Flag spectral features in solar system flux calibrators		1.00	0:00:04
4. hif_rawflagchans: Flag channels in raw data		1.00	0:07:03
5. hif_refant: Select reference antennas		1.00	0:00:27
6. h_tsyscal: Calculate Tsys calibration		1.00	0:04:07
• 7. hifa_tsysflag: Flag Tsys calibration		1.00	0:06:15
• 8. hifa_antpos: Correct for antenna position offsets	Nonzero antenna position offsets	0.90	0:00:07
9. hifa_wvrgcalflag: Calculate and flag WVR calibration		1.00	0:08:44
• 10. hif_lowgainflag: Flag antennas with low gain		1.00	0:14:47
11. hif_setmodels: Set calibrator model visibilities		1.00	0:09:05
12. hifa_bandpassflag: Phase-up bandpass calibration and flagging	Combined flagging and bandpass score	0.89	0:59:16
13. hifa_spwphaseup: Spw phase offsets calibration		1.00	0:02:56
9 14. hifa_gfluxscaleflag: Phased-up flux scale calibration + flagging		1.00	0:15:14
15. hifa_gfluxscale: Transfer fluxscale from amplitude calibrator		1.00	0:18:33
16. hifa_timegaincal: Gain calibration		0.93	1:21:33
17. hif_applycal: Apply calibrations from context		1.00	0:40:15

hifa_importdata: This module imports data for the pipeline. The most notable information on this page is the list of model flux densities for the calibration sources.

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1. hifa_importdata		1. Import Data											BACK		
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4. hif_rawflagchans	- I	Data from 1 measurement set was registered with	the pipeline. The imported data is sum	marised below.											
5. hif_refant	- I						Number Impor	ted							
6. h_tsyscal							-								
7. hifa_tsysflag 8. hifa_antpos	0 0	Measurement Set	SchedBlock ID		Src Type	Dst Type	Scans	Fields	Flux Densities	:	Size	flux.csv			
9. hifa_wvrgcalflag	Ŭ.	uidA002_Xd98580_X354.ms	uid://A001/X135b/X5d		ASDM	MS	9	3	22		16.1 GB	View or download			
10. hif_lowgainflag		Summary of Imported Measurement Sets													
11. hif_setmodels															
12. hifa_bandpassflag	9	Imported Flux Densities													
13. hifa_spwphaseup	- 1	The following flux densities were imported into the	pipeline context:												
14. hifa_gfluxscaleflag	Imported Flux Densities The following flux densities were imported into the pipeline context: Age of Nearest														
15. hifa_gfluxscale	- 1				Flux Density							Age Of Nearest Monitor Point (days)			
16. hifa_timegaincal		Measurement Set	Field	SpW	I	Q	U	v	Spix			menner i enn (auje)			
17. hif_applycal	- 1	uidA002_Xd98580_X354.ms	J0538-4405 (#0)	25	1.515 Jy	0.000 Jy	0.000 Jy	0.000 Jy	-0.5405	543679023		N/A			
18. hif_makeimlist				27	1.512 Jy										
19. hif_makeimages	- 1			29	1.510 Jy										
20. hif_makeimlist															
21. hif_makeimages				31	1.508 Jy										
22. hifa_imageprecheck	9			33	1.516 Jy										
23. hif_checkproductsize	- I			35	1.521 Jy										
24. hifa_exportdata	Ĩ.			37	1.520 Jy										
25. hif_mstransform 26. hifa_flagtargets	- II.			39	1.517 Jy										
25. hif_makeimlist	- II.			41	1.472 Jy										
28. hif_findcont	- II.														
29. hif_uvcontfit	- II.			43	1.470 Jy										
30. hif_uvcontsub	- II.			45	1.466 Jy										
				45	1.466 Jy										

In case of flux calibration problems, these numbers should be compared to data from the ALMA Calibrator Source Catalogue (<u>https://almascience.eso.org/sc/</u>). If the numbers differ, contact the local ARC for assistance with the dataset.

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6. h_tsyscal		Measurement Set SchedBlock ID Src Type Des Type Fields Flax Densities Size flax.csv uid_A002_Xd98580_X354.ms uid/A01/X135b/X5d ASDM MS 9 3 2 16.1 GB View or download														
7. hifa_tsysflag	9															
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14. hifa_gfluxscaleflag	9															
15. hifa_gfluxscale	- 1				Flux Density							Age Of Nearest Monitor Point (days)				
16. hifa_timegaincal	- 1	Measurement Set	Field	SpW	I.	Q	U	v	Spix			Monitor Point (days)				
17. hif_applycal	- 1	uidA002_Xd98580_X354.ms	J0538-4405 (#0)	25	1.515 Jy	0.000 Jy	0.000 Jy	0.000 Jy	-0.540	543679023		N/A				
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hifa_flagdata: This module performs a series of a priori flagging steps that remove data not usable for science (such as autocorrelated data and shadowed antennas). Ideally, the total percentages should be <~20%. If the percentages are higher, the data may have problems.

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17. hif_applycal		Files used for template flagging steps.											
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24. hifa_exportdata													002
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27. hif_makeimlist													354.
28. hif_findcont 29. hif_uvcontfit		Data Selection (by intent)	Before Task	Unwanted Intents	QA0	QA2	Online Flags	Flagging Template	Autocorrelations	Shadowed Antennas	Edge Channels	Total	ms
30. hif_uvcontsub		All Data	0.0%	11.0%	0.0%	0.0%	0.0%	3.5%	3.6%	0.9%	0.0%	19.1%	19.1%

hifa_flagdata: This module performs a series of a priori flagging steps that remove data not usable for science (such as autocorrelated data and shadowed antennas). Ideally, the total percentages should be <~20%. If the percentages are higher, the data may have problems.

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1. hifa_importdata	- 1	Files used for template flagging steps.											
2. hifa_flagdata													
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12. hifa_bandpassflag 13. hifa_spwphaseup	¥	Data Selection (by intent)	Before Task	Unwanted Intents	QA0	QA2	Online Flags	Flagging Template	Autocorrelations	Shadowed Antennas	Edge Channels	Total	ms
4. hifa_gfluxscaleflag	9	All Data	0.0%	11.0%	0.0%	0.0%	0.0%	3.5%	3.6%	0.9%	0.0%	19.1%	19.1%
5. hifa_gfluxscale	Ň.	Online of One shall Windows	0.00	0.02	0.00	0.00	0.00	4.0%	4.10	1.00	0.05	0.10	0.18
6. hifa_timegaincal	I	Science Spectral Windows	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	4.1%	1.0%	0.0%	9.1%	9.1%
7. hif_applycal	I	Bandpass	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	4.0%	2.2%	0.0%	10.2%	10.2%
8. hif_makeimlist	I	Flux	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	4.0%	2.2%	0.0%	10.2%	10.2%
9. hif_makeimages	I												
0. hif_makeimlist	- 1	Phase	0.0%	0.0%	0.0%	0.0%	0.1%	4.0%	4.0%	0.0%	0.0%	8.1%	8.1%
1. hif_makeimages	I	Target (science spws)	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	4.0%	0.0%	0.0%	8.0%	8.0%
2. hifa_imageprecheck	9	111 A002 V400500 V254	0.0%	11.0%	0.0%	0.0%	0.0%	2.5%	2.6%	0.0%	0.0%	10.18	
3. hif_checkproductsize	I	uidA002_Xd98580_X354.ms	0.0%	11.0%	0.0%	0.0%	0.0%	3.5%	3.6%	0.9%	0.0%	19.1%	
4. hifa_exportdata		Summary of flagged data. Each cell sta	es the amount of da	ata flagged as a fraction of f	the spec if	ied data se	election, with the	<i>lagging Agent</i> columns giv	ing this information per fl	agging agent.			
5. hif_mstransform		The percentages in each successive co	olumn represent the	additional data flagged by a	pplying the	at column's	s agent (after the	revious agents have been	applied).				
26. hifa_flagtargets													

Flagging reason vs time

27. hif_makeimlist 28. hif_findcont

29. hif_uvcontfit

30. hif uvcontsub

Plots of flagging reason vs time (from the online flags file).

uid___A002_Xd98580_X354.ms

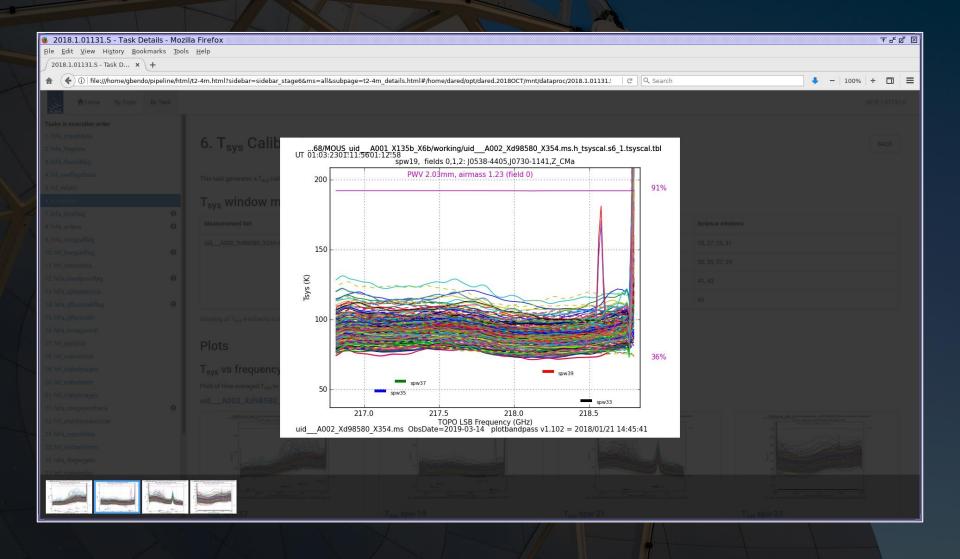
hifa_rawflagchans: More flagging is done here. Again, the total percentages should be <~20%.

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3. hifa_fluxcalflag							1								
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6. h_tsyscal	Measurement Set	Flagging Commands			Number of Statements	Flagging View	- 1								
7. hifa_tsysflag	uidA002_Xd98580_X354.ms	uidA002_Xd98580	_X354.ms-flag_commands.txt		0	Display	- 1								
8. hifa_antpos							1								
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11. hif_setmodels	Flagged data summary														
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16. hifa_timegaincal						1002	1								
17. hif_applycal						246PX	1								
18. hif_makeimlist						5800	1								
19. hif_makeimages						X354	- 1								
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21. hif_makeimages	All Data		19.1%	0.0%	19.1%	19.1%									
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23. hif_checkproductsize	Science Spectral Windows		9.1%	0.0%	9.1%	9.1%									
24. hifa_exportdata	Bandpass		10.2%	0.0%	10.2%	10.2%									
25. hif_mstransform 26. hifa_flagtargets	Flux		10.2%	0.0%	10.2%	10.2%									
27. hif_makeimlist	r ma			0.070	10.2 %	10.270									
28. hif_findcont	Phase		8.1%	0.0%	8.1%	8.1%									
29. hif_uvcontfit	Target		8.0%	0.0%	8.0%	8.0%									
30. hif_uvcontsub	uid A002 Xd98580 X354.ms		19.1%	0.0%	19.1%										

h_tsyscal: In this step, an a priori amplitude correction is derived based on the system temperature of the data. The plots of Tsys versus frequency are important to check.

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2. hifa_flagdata	6. T _{sys} Calibration			BACK		
3. hifa_fluxcalflag						
4. hif_rawflagchans	rawflagchans This task generates a Taya calibration table, mapping each science spectral window to the Taya window that overlaps in frequency.					
5. hif_refant						
6.h_tsyscal T _{sys} window mapping						
7. hifa_tsysflag	Measurement Set		- what we	Science windows		
8. hifa_antpos	measurement Set		T _{sys} window	Science windows		
9. hifa_wvrgcalflag	uidA002_Xd98580_X354.ms		17	25, 27, 29, 31		
10. hif_lowgainflag 9			19	33, 35, 37, 39		
11. hif_setmodels				33, 33, 37, 39		
12. hifa_bandpassflag 🛛 🥹			21	41, 43		
13. hifa_spwphaseup			23	45		
14. hifa_gfluxscaleflag						
15. hifa_gfluxscale	Mapping of T _{sys} window to science window					
16. hifa_timegaincal	Plots T _{sys} vs frequency Plots of time-averaged T _{sys} vs frequency, colored by antenna.					
17. hif_applycal						
18. hif_makeimlist 19. hif_makeimages						
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30. hif_uvcontsub	T _{sys} spw 17	T _{sys} spw 19	T _{sys} spw 21	T _{sys} spw 23		

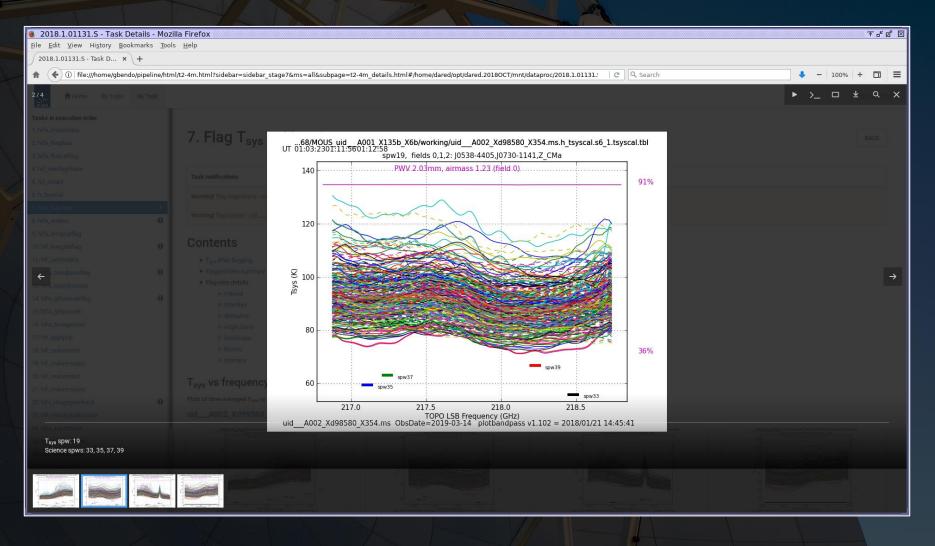
The plots should be devoid of spectral features except in the locations of atmospheric lines, and the amplitudes of all lines in the plots should be similar.



hifa_tsysflag: This step applies flagging to bad T_{sys} data. It is useful to check the plots of T_{sys} versus frequency again to make sure bad data were flagged but good data were not. (Data covering atmospheric features should not necessarily be flagged here.)

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2. hifa_flagdata		1				
3. hifa_fluxcalflag		1				
4. hif_rawflagchans	Task notifications	1				
5. hif_refant						
6. h_tsyscal	Warning! flag edgechans - uidA002_Xd98580_X354 ms iteration 1 raised 12 flagging commands					
7. hifa_tsysflag	Warningt flag birding - uid - A002, Vd09590, V254 me iteration 1 raised 6 flagging commande					
8. hifa_antpos						
9. hifa_wvrgcalflag	Contents					
10. hif_lowgainflag						
11. hif_setmodels	• Typs after flagging					
12. hifa_bandpassflag	Flagged data summary Flag step details					
13. hifa_spwphaseup	o manual					
14. hifa_gfluxscaleflag	o nmedian					
15. hifa_gfluxscale	◦ derivative					
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17. hif_applycal						
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26. hifa_flagtargets						
27. hif_makeimlist	3					
28. hif_findcont						
29. hif_uvcontfit						
30. hif_uvcontsub	And And <td></td>					

hifa_tsysflag: This step applies flagging to bad T_{sys} data. It is useful to check the plots of T_{sys} versus frequency again to make sure bad data were flagged but good data were not. (Data covering atmospheric features should not necessarily be flagged here.)



hifa_wvrgcalflag: In this step, an a priori phase correction based on measurements from water vapour radiometers is derived. The plots of the data before and after the application of the corrections should be checked to ensure that the corrections improve the data.

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1. hifa_importdata	- 1	0. WV/D Collibration and Flagging
2. hifa_flagdata	- 1	9. WVR Calibration and Flagging
3. hifa_fluxcalflag	- 1	
4. hif_rawflagchans	- 1	This task checks whether the WVR radiometers are working as intended, interpolating for antennas that are not. The WVR caltable is only added to subsequent pre-applys if it gives a tangible improvement.
5. hif_refant	- 1	
6. h_tsyscal	_ 1	Results
7. hifa_tsysflag	9	
8. hifa_antpos	0	Plots
9. hifa_wvrgcalflag		The pipeline tests whether application of WVR correction improves the data by performing a gaincal for a chosen field, usually the bandpass calibrator, and comparing the resulting phase corrections evaluated both with and without application of WVR correction. Plots
10. hif_lowgainflag	9	based on these data in these evaluation caltables are presented below.
11. hif_setmodels		Flagging metric view(s)
12. hifa_bandpassflag 13. hifa_spwphaseup	×	
14. hifa_gfluxscaleflag		The following plots show the flagging metric used by the pipeline to determine which antennas' WVR corrections to flag. The RMS phase during observation of the bandpass calibrator is calculated without WVR corrections applied, and with WVR corrections applied, and the wrigcal task itself flags the WVR data on a given antenna, then the pipeline will not calculate a metric here.
15. hifa_gfluxscale	Ů,	
16. hifa_timegaincal	- 1	uidA002_Xd98580_X354.ms
17. hif_applycal	- 1	Refer trapping After an and a second se
18. hif_makeimlist	- 1	
19. hif_makeimages	- 1	
20. hif_makeimlist	- 1	
21. hif_makeimages	- 1	
22. hifa_imageprecheck	9	
23. hif_checkproductsize	- 1	Antenna [kt] Antenna [kt]
24. hifa_exportdata		Spectral window 45
25. hif_mstransform		
26. hifa_flagtargets		
27. hif_makeimlist		Phase correction with/without WVR
28. hif_findcont		The following set of plots show the improvement in the rms phase after applying the WVR corrections. These plots are calculated for various data intents after both the pipeline and wvrgcal task have selected antennas whose WVR correction needs flagging. The
29. hif_uvcontfit		correction applied to those antennas in these plots is the correction interpolated from neighboring antennas. Sometimes antennas can have sufficiently corrupted data that the metric can still not be calculated, but those antennas will in most cases be flagged for the
30. hif_uvcontsub		rest of the calibration process. Click on a link below to show all flagging metric views for that measurement set.

hifa_wvrgcalflag: In this step, an a priori phase correction based on measurements from water vapour radiometers is derived. The plots of the data before and after the application of the corrections should be checked to ensure that the corrections improve the data.

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	The following set of plots show the improvement in the rms phase after applying the WVR corrections. These plots are calculated for various data intents after both the pipeline and wingcal task have selected antennas whose WVR correction needs flagging. The correction applied to those antennas whose antennas will in most cases be flagged for the
4.hif_rawflegchans	rest of the calibration process. Click J0730-1141, J0538-4405 (PHASE, AMPLITUDE, BANDPASS)
5.htt_refant	SPW 45 Correlations X and Y All Antennas Scans 3,6 and 9
6 h_tsyscal	
7, hifa_tsysflag 🛛 😌	The next set of plots show the devia
at hole allowed that	Click the summary plots to enlarge
10. hr _lowganflag	
11 hif_setmodels	
12. hifa_bandpaasillag 0	
13. htfa_spwphaseup	
14. hifa_gfluxocaleflag O	
15. hifa_gilusscale	uidA002_Xd96580_X35 Spectral window 45 Spectral window 45
16. hifa_timegaincal	
17. hif_applycal	
18. hrf_makeimlist	
19. hif_makemages	
20. ht. makemist	
	Phase correction vs
	Plots show the phase offset (lower)
	Scan
24. hifa_exportdata	The lower panel of these plots show X before X after Y after Y after deviations about the median for data with WVR correction applied to the RMS deviations without WVR correction. One plot is
26. http://agiargets 27. htt. makeimlist	Click the summary plots to enlarge them, or the summary plot title to show a gallery of phase offset plots for individual antenna.
26 hit Indent	uidA002_Xd98580_X854.ms
Spectral window: 45	

hifa_wvrgcalflag: In this step, an a priori phase correction based on measurements from water vapour radiometers is derived. The plots of the data before and after the application of the corrections should be checked to ensure that the corrections improve the data.

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2. hifa_flagdata						
3. hifa_fluxcalflag						
4. hif_rawflagchans	without WVR correction. One plot is a	are definition of the game and esticate what and malout that	concetton applica. The	apper parter on one that a that of the table action of a		
5. hif_refant	Click the summary plots to enlarge ti	J0538-4405 (AMPLITUD SPW 45 Correlations X and Y All Antenna		Scan 3		
6. h_tsyscal		Phase RMS without WVR / Phase RMS with WVR	5			
7. hifa_tsysflag	IIIIA002_XU98380_X33					
8. hifa_antpos	DE LA SULLE DE LA					
9. hifa_wvrgcalflag	2 ^{10¹}					
10. hif_lowgainflag	9 ¹⁰¹	Median.	· · · · ·			
11. hif_setmodels		● ●		•		
12. hifa_bandpassflag	10°					
13. hifa_spwphaseup	The second secon	No Improvement				
14. hifa_gfluxscaleflag		-Median Absolute Deviation from Median Phase		·		
15. hifa_gfluxscale	Spectral window 45 70	_	- 0	-		
16. hifa_timegaincal	60	-	@ =			
17. hif_applycal 18. hif_makeimlist	Flagging results and WVR a	- @@	8	-		
19. hif_makeimages	de 9		80	- 9		
20. hif_makeimlist	Measurement Set 30			. 1		
21. hif_makeimages	20 uidA002_Xd98580_X354.ms					4
22. hifa_imageprecheck	10	i in second in a	1 TA AN	• •		
23. hif_checkproductsize	Flagging results and applications for 0	50 50 100 Distance to Reference An		150		
24. hifa_exportdata	CASA wvrgcal report			Yafter		
25. hif_mstransform						
26. hifa_flagtargets						
27. hif_makeimlist				8		
28. htf_findcont						
Spectral window: 45						1.7 mm

It is also worth noting whether the correction is interpolated for any antennas. This should only be done for very few antennas if any.

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Ele Edit View History Bookmarks To 2018.1.01131.S - Task D × +	ois <u>H</u> eip					
file:///home/gbendo/pipeline/ht	tml/t2-4m.html?sidebar=sidebar_stage9&ms=all&subpage=t2-4m	_details.html		C Search	•	- 100% + 🔟 🔳
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Tasks in execution order 1. hifa_importdata	CASA wvrgcal report					
2. hifa_flagdata	Measurement Set	Antenna	WVR?	Interpolated Correction	RMS	Disc
3. hifa_fluxcalflag	uidA002_Xd98580_X354.ms	DA41	*	×	270.0 µm	1.6 mm
4. hif_rawflagchans	uidA002_Xd98580_X354.ms	DA42	*	×	341.0 µm	1.6 mm
5. hif_refant	uidA002_Xd98580_X354.ms	DA43	•	×	289.0 µm	1.7 mm
6. h_tsyscal 7. hifa_tsysflag	uidA002_Xd98580_X354.ms	DA44	*	×	293.0 µm	1.7 mm
8. hifa_antpos	uidA002_Xd98580_X354.ms	DA45	4	×	272.0 µm	1.7 mm
9. hifa_wvrgcalflag	uidA002_Xd98580_X354.ms	DA46	*	×	309.0 µm	1.6 mm
10. hif_lowgainflag 🛛 🕘	uidA002_Xd98580_X354.ms	DA47	1	×	276.0 µm	1.6 mm
11. hif_setmodels 12. hifa_bandpassflag	uidA002_Xd98580_X354.ms	DA49	~	×	333.0 µm	1.6 mm
13. hifa_spwphaseup	uidA002_Xd98580_X354.ms	DA50		×	287.0 µm	1.7 mm
14. hifa_gfluxscaleflag	uidA002_Xd98580_X354.ms	DA51	~	×	295.0 µm	1.7 mm
15. hifa_gfluxscale	uidA002_Xd98580_X354.ms	DA52	•	×	273.0 µm	1.7 mm
16. hifa_timegaincal 17. hif_applycal	uidA002_Xd98580_X354.ms	DA53	~	×	259.0 µm	1.7 mm
18. hif_makeimlist	uidA002_Xd98580_X354.ms	DA54	•	×	280.0 µm	1.7 mm
19. hif_makeimages	uidA002_Xd98580_X354.ms	DA55	4	×	276.0 µm	1.6 mm
20. hif_makeimlist	uidA002_Xd98580_X354.ms	DA56	4	×	267.0 μm	1.6 mm
21. hif_makeimages 22. hifa_imageprecheck 9	uidA002_Xd98580_X354.ms	DA57	•	×	269.0 μm	1.6 mm
22. hifa_imageprecheck 23. hif_checkproductsize	uidA002_Xd98580_X354.ms	DA58	1	×	279.0 μm	1.7 mm
24. hifa_exportdata	uidA002_Xd98580_X354.ms	DA59	1	×	297.0 μm	1.7 mm
25. hif_mstransform	uidA002_Xd98580_X354.ms	DA60		×	281.0 µm	1.5 mm
26. hifa_flagtargets	uidA002_Xd98580_X354.ms	DA61	•	×	299.0 µm	1.6 mm
27. hif_makeimlist			• •	×		
28. hif_findcont 29. hif_uvcontfit	uidA002_Xd98580_X354.ms	DA62	•		303.0 µm	1.7 mm
29. htt_uvcontrit 30. htt_uvcontsub	uidA002_Xd98580_X354.ms	DA63	×	*	357.0 μm	1.7 mm
	uid 4002 Xd98580 X354 ms	D464	3	×	326.0 um	1.6 mm

hif_setmodels: This is where the model flux densities (displayed by hifa_importdata) are applied to data for the flux calibrator. The model amplitudes versus uv distance are useful for showing if any interferometry effects could cause issues (as would be expected for planetary objects).

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Tasks in execution order	- I											
1. hifa_importdata												
2. hifa_flagdata		11. Set model f	lux									BACK
3. hifa_fluxcalflag												
4. hif_rawflagchans		Results										
5. hif_refant												
6. h_tsyscal		The following flux densities were set in	the measurement set model column and recorded in the	pipeline contex	. Only the spectral i	ndex of the bandpass	calibrator is se	t here and its fl	ux density will I	oe set later.		
7. hifa_tsysflag	0						Flux Densit	у				
8. hifa_antpos	0											
9. hifa_wvrgcalflag		Measurement Set	Field	SpW	Centre Freq	Band	1	Q	U	v	Spix	flux.csv
10. hif_lowgainflag	•	uidA002_Xd98580_X354.ms	J0538-4405 (#0) BANDPASS AMPLITUDE	25	218.763 GHz	ALMA Band 6	1.515 Jy	0.000 Jy	0.000 Jy	0.000 Jy	-0.540543679023	View or download
11. hif_setmodels				27	219.564 GHz		1.512 Jy					
12. hifa_bandpassflag	θ			2/	219.004 0112		1.512 Jy					
13. hifa_spwphaseup	9			29	219.953 GHz		1.510 Jy					
14. hifa_gfluxscaleflag 15. hifa_gfluxscale				31	220.402 GHz		1.508 Jy					
16. hifa_timegaincal												
17. hif_applycal				33	218.479 GHz		1.516 Jy					
18. hif_makeimlist				35	217.108 GHz		1.521 Jy					
19. hif_makeimages				37	217.242 GHz		1.520 Jy					
20. hif_makeimlist												
21. hif_makeimages				39	218.226 GHz		1.517 Jy					
22. hifa_imageprecheck				41	230.542 GHz		1.472 Jy					
23. hif_checkproductsize				43	231.224 GHz		1.470 Jy					
24. hifa_exportdata	- 1			45	231.224 0HZ		1.470 Jy					
25. hif_mstransform				45	232.504 GHz		1.466 Jy					
26. hifa_flagtargets		Setjy Results										
27. hif_makeimlist												
28. hif_findcont		Model amplitude vs U	V distance									
29. hif_uvcontfit		•	e for each Measurement Set. One plot is generated per b	aseband with d	ata shown for all an	tennas and correlation	ns. colored by s	DW				

hif_setmodels: This is where the model flux densities (displayed by hifa_importdata) are applied to data for the flux calibrator. The model amplitudes versus uv distance are useful for showing if any interferometry effects could cause issues (as would be expected for planetary objects).

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Tasks in execution order				
1. hifa_importdata		45	232.504 GHz 1.466 Jy	
2. hifa_flagdata	Setjy Results			
3. hifa_fluxcalflag	1			
4. hif_rawflagchans	Model amplitude vs UV dis	tance		
5. hif_refant		Measurement Set. One plot is generated per baseband, with da	a shown for all antennas and correlations, colored by snw	
6. h_tsyscal		measurement occ one piorio generated per baseband, mar da	a shown to all alternas and correlations, colored by spik.	
7. hifa_tsysflag				
8. hifa_antpos	Amp:model vs. UVdist	Amp:model vs. UVdist		Amp:model vs. UVdist
9. hifa_wvrgcalflag	1590	3.5900	1.4720	20-
10. hif_lowgainflag	1.5300 8 1.5300	1530	1.4733	8 ¹⁶
11. hif_setmodels	15330-	8 15380 8	MAR 1. 6733 -	
12. hifa_bandpassflag	15500	15320-	1005	30
13. hifa_spwphaseup	1.500	1.5380	1400	
14. hifa_gfluxscaleflag	1.500 J 0 50 100 150 200 250 300 350 UVdist (m)	400 0 50 50 50 100 20 20 50 50 UVdist (m)	300 400 1.400	220 30 30 20 40 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
15. hifa_gfluxscale	Baseband: 1	Baseband: 2	Baseband: 3	Baseband: 4
16. hifa_timegaincal	ALMA Band 6 Spws 25, 27, 29 and 31	ALMA Band 6 Spws 33, 35, 37 and 39	ALMA Band 6 Spws 41 and 43	ALMA Band 6 Spw 45
17. hif_applycal	Model amplitude vs UV distance in baseband 1	for Model amplitude vs UV distance in baseba	nd 2 for Model amplitude vs UV distance	n baseband 3 for Model amplitude vs UV distance in baseband 4 for
18. hif_makeimlist	AMPLITUDE calibrator.	AMPLITUDE calibrator.	AMPLITUDE calibrator.	AMPLITUDE calibrator.
19. hif_makeimages				
20. hif_makeimlist				
21. hif_makeimages	Pipeline QA			
22. hifa_imageprecheck	Input Parameters			
23. hif_checkproductsize	input Parameters			
24. hifa_exportdata	Tasks Execution Statistics			
25. hif_mstransform				
26. hifa_flagtargets	CASA logs for stage 11			
27. hif_makeimlist				
28. hif_findcont 29. hif_uvcontfit	 View or download stage11/casapy.log (30.3 KB)		
30. hif_uvcontrit				
30. htt_uvcontsub				

hifa_bandpassflag: Corrections for the phase and amplitude versus frequency are derived in this step. The plots of these quantities versus frequency should be smooth. Otherwise, it may be necessary to recalibrate the data.

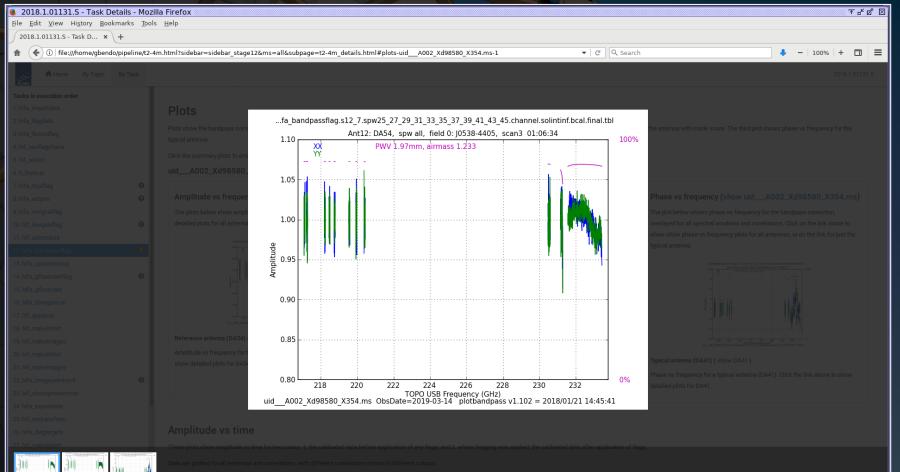
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Tasks in execution order											
1. hifa_importdata											
2. hifa_flagdata		12. Bandpass Calibration and Flagging									
3. hifa_fluxcalflag											
4. hif_rawflagchans											
5. hif_refant		Task notifications									
6. h_tsyscal		Warning! Evaluation of flagging heuristics for uidA002_Xd98580_X354.ms ra	ised total of 46 flagging command(s)								
7. hifa_tsysflag	0										
8. hifa_antpos	0	This task performs a preliminary bandpass solution and applies it, then compute	s the flagging heuristics by calling hif_correctedampflag which looks for outlier visibility points by statistically examinii	ng the scalar difference of the corrected amplitude minus model							
9. hifa_wvrgcalflag	- 1	amplitudes, flags those outliers, then derives a final bandpass solution (if any fla	gs were generated). The philosophy is that only outlier data points that have remained outliers after calibration will be	flagged. Note that the phase of the data is not assessed.							
10. hif_lowgainflag	9	In further detail, the workflow is as follows: an a priori calibration is applied using pre-existing caltables in the calibration state, a preliminary bandpass solution and amplitude gaincal solution is solved and applied, the flagging heuristics are run and any outliers are									
11. hif_setmodels	- 1	flagged, a final bandpass solution is solved (if necessary) and the name "final" is	appended to this caltable. Plots are generated at two points in this workflow: after bandpass calibration but before fla	gging heuristics are run, and after flagging heuristics have been run							
12. hifa_bandpassflag	0	and applied. If no points were flagged, the "after" plots are not generated or displa	ayed. The score for this stage is a simple combination (multiplication) of the standard data flagging score (depending	on the fraction of data flagged) and the score for the bandpass							
13. hifa_spwphaseup	- 1	solution.									
14. hifa_gfluxscaleflag	9	Contents									
15. hifa_gfluxscale	- 1	Contents									
16. hifa_timegaincal	- 1	Flagging commands									
17. hif_applycal	- 1	Flagged data summary table									
18. hif_makeimlist	- 1	 Bandpass results tables Amplitude/Phase vs frequency plots (per EB) 									
19. hif_makeimages	- 1	Amplitude vs time plots for flagging									
20. hif_makeimlist	- 1	 Amplitude vs UV distance plots for flagging 									
21. hif_makeimages											
22. hifa_imageprecheck	9	Flagging									
23. hif_checkproductsize		Measurement Set Flagging Commands Number of Statements									
24. hifa_exportdata		Measurement Set Flagging Commands Number of Statements									
25. hif_mstransform		uidA002_Xd98580_X354.ms	uidA002_Xd98580_X354.ms-flag_commands.txt	46							
26. hifa_flagtargets		Report Files									
27. hif_makeimlist											
28. hif_findcont	Elagged data summary										
29. hif_uvcontfit		Flagged data summary									
30. hif_uvcontsub		Measurement Set: uidA002_Xd98580_X354.ms									

hifa_bandpassflag: Corrections for the phase and amplitude versus frequency are derived in this step. The plots of these quantities versus frequency should be smooth. Otherwise, it may be necessary to re-calibrate the data.

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Tasks in execution order		
1. hifa_importdata	Plots	
2. hifa_flagdata		lifed the entenne with mode score. The third plat above phase up frequency for the
3. hifa_fluxcalflag	Plots show the bandpass correction applied to the target source. The first two plots show amplitude vs frequency; one for the reference antenna and one for a typical antenna, iden typical antenna.	ined the antenna with mode score. The third plot shows phase vs frequency for the
4. hif_rawflagchans		
5. hif_refant	Click the summary plots to enlarge them, or the plot title to see see detailed plots per spectral window and antenna.	
6. h_tsyscal	uidA002_Xd98580_X354.ms	
7. hifa_tsysflag	0	
8. hifa_antpos	Amplitude vs frequency (show uidA002_Xd98580_X354.ms)	Phase vs frequency (show uidA002_Xd98580_X354.ms)
9. hifa_wvrgcalflag	The plots below show amplitude vs frequency for the bandpass correction, overlayed for all spectral windows and correlations. Click on the link above to show show	The plot below shows phase vs frequency for the bandpass correction,
10. hif_lowgainflag	detailed plots for all antennas, or on the links below to show plots with specific antennas preselected.	overlayed for all spectral windows and correlations. Click on the link above to
11. hif_setmodels		show show phase vs frequency plots for all antennas, or on the link for just the typical antenna.
12. hifa_bandpassflag		typical alternia.
13. hifa_spwphaseup		. Rc Jandquardhquad 2, 7 april 2, 7 2,9,17, 70, 71, 71, 71, 71, 71, 71, 71, 71, 71, 71
14. hifa_gfluxscaleflag		B
15. hifa_gfluxscale		· · · ·
16. hifa_timegaincal		
17. hif_applycal		
18. hif_makeimlist		-10
19. hif_makeimages	Reference antenna (DA54) (show DA54) Typical antenna (DA41) (show DA41)	-115 <u>289 200 202 202 202 200 200 200</u> 0000000000
20. hif_makeimlist	Amplitude vs frequency for the reference antenna (DA54). Click the link above to Amplitude vs frequency for a typical antenna (DA41). Click the link above to show detailed plots for DA54. detailed plots for DA54.	Typical antenna (DA41) (show DA41)
21. hif_makeimages		Phase vs frequency for a typical antenna (DA41). Click the link above to show
22. hifa_imageprecheck	NB. random antenna until scores are working	detailed plots for DA41.
23. hif_checkproductsize		
24. hifa_exportdata		
25. hif_mstransform	Amplitude vs time	
26. hifa_flagtargets	Amplitude vs time	
27. hif_makeimlist	These plots show amplitude vs time for two cases: 1, the calibrated data before application of any flags; and 2, where flagging was applied, the calibrated data after application of f	lags.
28. hif_findcont	Data are plotted for all antennas and correlations, with different correlations shown in different colours.	
29. hif_uvcontfit	uid A002 Xd98580 X354.ms	

30. hif uvcontsub

hifa_bandpassflag: Corrections for the phase and amplitude versus frequency are derived in this step. The plots of these quantities versus frequency should be smooth. Otherwise, it may be necessary to recalibrate the data.



id A002 Xd98580 X354.ms

Additionally, the plots of the amplitude versus time and versus uv distance for the bandpass calibrator should contain no severe outliers. Any outliers will need to be flagged before imaging.

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Tasks in execution order	A Disch of			
1. hifa_importdata	Amplitude vs time			
2. hifa_flagdata	These plots show amplitude vs time for two cases: 1, the calibrated	data before application of any flags; and 2, where flagging was app	lied, the calibrated data after application of flags.	
3. hifa_fluxcalflag	Data are plotted for all antennas and correlations, with different corr	relations shown in different colours.		
4. hif_rawflagchans	uidA002_Xd98580_X354.ms			
5. hif_refant	Amp:corrected vs. Time Spw: 25	Amp:corrected vs. Time Spw: 27	Amp:corrected vs. Time Spw: 29	Amp:corrected vs. Time Spw: 31
6. h_tsyscal	10	 Inferiora inferior and a factoria 	30 III III III III III III III III III I	B and a statistic build be the
7. hifa_tsysflag	28-	20-		20-
8. hifa_antpos	33-	P2 13-		913-
9. hifa_wvrgcalflag	A MARKET AND A MARKET		100 A	and the second se
10. hif_lowgainflag	80 10 10 10 10 10 10 10 10 10 10 10 10 10			
11. hif_setmodels		0.0		
12. hifa_bandpassflag 🛛 😣	0104x00 0200500 030600 030500 030600 035000 035000 Time (from 2015/02/14) (bhumeus)	02-04-00 03:05:00 03:00 03:05:0000000000	03.04.08 03.05.00 03.05.00 03.05.00 03.05.00 02.05.00 Time (from 2019/03/14) (Minmersa)	0104x00 1000mm 1000mm 1000mm 100mm 100mm 010mm 020000 Time (frem 2018/03/14) (Mummusa)
13. hifa_spwphaseup	Spectral Window 25	Spectral Window 27	Spectral Window 29	Spectral Window 31
14. hifa_gfluxscaleflag	Intents: BANDPASS	Intents: BANDPASS	Intents: BANDPASS	Intents: BANDPASS
15. hifa_gfluxscale	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.
16. hifa_timegaincal				
17. hif_applycal	Amp:corrected vs. Time Spw: 33	Amp:corrected vs. Time Spw: 35	Amp:corrected vs. Time Spw: 37	Amp:corrected vs. Time Spw: 39
18. hif_makeimlist	23		23	25
19. hif_makeimages	20	28-	28-	20
20. hif_makeimlist	Balla	teres and the second	P015	P
21. hif_makeimages 22. hifa_imageprecheck	U MANY			300000
23. hif_checkproductsize	85 Control 10 Control	63		
24. hifa_exportdata	0.0400 (1000 0.04000 0.04000 0.04000 0.05000 (0.0500)	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0	80 ⁰
25. hif_mstransform				02-04-00 50.0500 50.0500 50.0500 51.0500 52.0500 52.0500 Time (from 2015/02/14) (Altermina)
26. hifa_flagtargets	Spectral Window 33	Spectral Window 35	Spectral Window 37	Spectral Window 39
27. hif_makeimlist	Intents: BANDPASS	Intents: BANDPASS	Intents: BANDPASS	Intents: BANDPASS
28. hif_findcont	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.
29. hif_uvcontfit				
30. hif_uvcontsub	Amp:corrected vs. Time Spw: 41	Amp:corrected vs. Time Spw: 43	Amp:corrected vs. Time Spw: 45	

Additionally, the plots of the amplitude versus time and versus uv distance for the bandpass calibrator should contain no severe outliers. Any outliers will need to be flagged before imaging.

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Tasks in execution order										
1. hifa_importdata	Amplitude vs UV distance									
2. hifa_flagdata	These plots show amplitude vs UV distance for two cases: 1, the call	librated data before application of any flags; and 2, where flagging w	as applied, the calibrated data after application of flags.							
3. hifa_fluxcalflag										
4. hif_rawflagchans	Data are plotted for all antennas and correlations, with different corre	elations snown in different colours.								
5. hif_refant	uidA002_Xd98580_X354.ms									
6. h_tsyscal	Amp:corrected vs. UVdist Spw: 25	Amp:corrected vs. UVdist Spw: 27	Amp:corrected vs. UVdist Spw: 29	Amp:corrected vs. UVdist Spw: 31						
7. hifa_tsysflag	20		11							
8. hifa_antpos 🛛 😨				1.2						
9. hifa_wvrgcalflag										
10. hif_lowgainflag	as	65		44 C						
11. hif_setmodels										
12. hifa_bandpassflag	UVdist (m)	UVdist (w)	UVidiat (w)	0 50 50 50 20 20 50 50 50 40						
13. hifa_gfluxscaleflag 9	Spectral Window 25	Spectral Window 27	Spectral Window 29	Spectral Window 31						
15. hifa_gfluxscale	Intents: BANDPASS	Intents: BANDPASS	Intents: BANDPASS	Intents: BANDPASS						
16. hifa_timegaincal	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.						
17. hif_applycal										
18. hif_makeimlist	Amp:corrected vs. UVdist Spw: 33	Amp:corrected vs. UVdist Spw: 35	Amp:corrected vs. UVdist Spw: 37	Amp:corrected vs. UVdist Spw: 39						
19. hif_makeimages	··· water hilling and states are shown	and the second se	20 State State State State State	an and a state of the state of						
20. hif_makeimlist										
21. hif_makeimages										
22. hifa_imageprecheck 9	■ **	4	■ **	8						
23. hif_checkproductsize										
24. hifa_exportdata	0 50 200 250 200 200 300 400 UVdist (m)	0.0-J 0.50 200 200 200 200 300 400 UVdist (m)	0.6-3 0.50 100 150 200 210 100 150 400 Wviist (m)	0.0 J 0 50 200 20 20 20 30 350 400 UVdist (m)						
25. hif_mstransform	Spectral Window 33	Spectral Window 35	Spectral Window 37	Spectral Window 39						
26. hifa_flagtargets	Intents: BANDPASS	Intents: BANDPASS	Intents: BANDPASS	Intents: BANDPASS						
27. hif_makeimlist	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.						
28. hif_findcont										
29. hif_uvcontfit 30. hif_uvcontsub	Amp:corrected vs. UVdist Spw: 41	Amp:corrected vs. UVdist Spw: 43	Amp:corrected vs. UVdist Spw: 45							
so. m_uvcontsub	Amp:corrected vs. Ovdist Spw: 41	Amp:corrected vs. ovdist spw: 43	Amp:corrected vs. Ovdist spw: 45							

hifa_gfluxscaleflag: Outliers from the hifa_bandpassflag step should be flagged before this step. It is worth checking the plots of amplitude versus time and versus uv distance, which are now shown for the phase calibrator (and other calibrators when they are present).

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ноте Ву Торіс Ву Та	isk					2018.1.01	1131.S				
Tasks in execution order											
1. hifa_importdata	14 Dhoood up Eluxooolo Colibration and Elogging										
2. hifa_flagdata	- 1	14. Phased-up Fluxscale Calibration and Flagging									
3. hifa_fluxcalflag	- 1										
4. hif_rawflagchans	- 1	Task notifications									
5. hif_refant	- 1	Task Inulications					_				
6. h_tsyscal	- 1	Warning! Evaluation of flagging heuristics for uidA002_Xd98580_X354.ms ra	aised total	of 32 flagging command(s)							
7. hifa_tsysflag	0										
8. hifa_antpos	9		-	ling hif_correctedampflag which looks for outlier visibility points by statistically examining the							
9. hifa_wvrgcalflag				bration will be flagged. The heuristic works equally well on resolved calibrators and point sou	rces because it is not p	performing a vector difference, and thus is not sensitive t	to				
10. hif_lowgainflag	0	nulls in the flux density vs. uvdistance domain. Note that the phase of the data is	not asses	sed.							
11. hif_setmodels				ng caltables in the calibration state, a preliminary phase and amplitude gaincal solution is sol							
12. hifa_bandpassflag	0	generated at two points in this workflow: after preliminary phase and amplitude or for this stage is the standard data flagging score, which depends on the fraction		out before flagging heuristics are run, and after flagging heuristics have been run and applied	. If no points were flagg	jed, the "after" plots are not generated or displayed. The s	score				
13. hifa_spwphaseup		for this stage is the standard data hagging score, which depends on the fraction	OI Udld IId	ygeu.							
14. hifa_gfluxscaleflag	•	Contents									
15. hifa_gfluxscale	- 1										
16. hifa_timegaincal	- 1	 Flagging commands Flagged data summary table 									
17. hif_applycal	- 1	Amplitude vs time plots for flagging									
18. hif_makeimlist	- 1	Amplitude vs UV distance plots for flagging									
19. hif_makeimages	- 1										
20. hif_makeimlist	- 1	Flagging									
21. hif_makeimages		No	F launing	0		Number of Statements	_				
22. hifa_imageprecheck		Measurement Set	Flagging	Commands		Number of Statements					
23. hif_checkproductsize 24. hifa_exportdata		uidA002_Xd98580_X354.ms	uidA0	02_Xd98580_X354.ms-flag_commands.txt		32					
25. hif_mstransform		Report Files					_				
26. hifa_flagtargets	- 1	Report lies									
27. hif_makeimlist		Flagged data summary									
28. hif_findcont											
29. hif_uvcontfit		Measurement Set: uidA002_Xd98580_X354.ms									
30. hif_uvcontsub		Data Selection		flagged before	flagged after						
	-										

hifa_gfluxscaleflag: Outliers from the hifa_bandpassflag step should be flagged before this step. It is worth checking the plots of amplitude versus time and versus uv distance, which are now shown for the phase calibrator (and other calibrators when they are present).

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Home By Topic	By Task	2018.1.01131.S									
Tasks in execution order		Amplitude vs time									
1. hifa_importdata											
2. hifa_flagdata		These plots show amplitude vs time for two cases: 1, the calibrat	ted data before application of any flags; and 2, where flagging was ap	plied, the calibrated data after application of flags.							
3. hifa_fluxcalflag		Data are plotted for all antennas and correlations, with different c	orrelations shown in different colours.								
4. hif_rawflagchans		uidA002_Xd98580_X354.ms			1						
5. hif_refant		Amp:corrected vs. Time Spw: 25	Amp:corrected vs. Time Spw: 27	Amp:corrected vs. Time Spw: 29	Amp:corrected vs. Time Spw: 31						
6. h_tsyscal		14									
7. hifa_tsysflag	θ	14 19 v.	13- 9	13-	13-						
8. hifa_antpos	0	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	a b b	919-1-1-	Vertex to the second seco						
9. hifa_wvrgcalflag		60 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -	The second se	- Tank							
10. hif_lowgainflag	9	46 (E)		0.5							
11. hif_setmodels		02 035200 032100 032400 033500 051600 051600 03800 03800 03800 035200 032100 052600 051600 051600 03800 03800	00 01,200 01,200 01,400 01,500 01,500 01,200 01,500 01,200 Time (frem 201800/14) (https://www.sa)	0.0 0.1200 01100 01400 01400 01400 01100 01100 01400 01400 01400 014000 The (from 2015/92/14) (horman)	0.2 0.2200 0.2100 0.1400 0.1500 0.5100 0.1700 0.1600 0.1500 0.2000 Time (from 0.0500/14)(bhommas)						
12. hifa_bandpassflag	9										
13. hifa_spwphaseup		Spectral Window 25	Spectral Window 27	Spectral Window 29	Spectral Window 31						
14. hifa_gfluxscaleflag	0	Intents: PHASE Fields: J0730-1141	Intents: PHASE Fields: J0730-1141	Intents: PHASE Fields: J0730-1141	Intents: PHASE Fields: J0730-1141						
15. hifa_gfluxscale		Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.						
16. hifa_timegaincal											
17. hif_applycal											
18. hif_makeimlist		Amp:corrected vs. Time Spw: 33	Amp:corrected vs. Time Spw: 35	Amp:corrected vs. Time Spw: 37	Amp:corrected vs. Time Spw: 39						
19. hif_makeimages		16-			34						
20. hif_makeimlist		1 12 -	8 3.4	B 12	12 12 1						
21. hif_makeimages			1								
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23. hif_checkproductsize		84 P									
24. hifa_exportdata	1	027 05200 05200 05300 053600 053600 053600 053600 05800 03800 Time (from 2015/03214) (Mommosa)	012 01.1200 01.1600 05.1400 05.5400 05.7400 05.800 05.2600 01.2000 Time (from 201.800/14) (Maximusa)	0.27- 	01200 013000 013000 011500 011000 011700 013000 015000 01000 Time (from 2015/03/14) (\$https://www.sa)						
25. hif_mstransform		Spectral Window 33	Spectral Window 35	Spectral Window 37	Spectral Window 39						
26. hifa_flagtargets		Intents: PHASE	Intents: PHASE	Intents: PHASE	Intents: PHASE						
27. hif_makeimlist		Fields: J0730-1141	Fields: J0730-1141	Fields: J0730-1141	Fields: J0730-1141						
28. hif_findcont		Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.						
29. hif_uvcontfit											

hifa_gfluxscaleflag: Outliers from the hifa_bandpassflag step should be flagged before this step. It is worth checking the plots of amplitude versus time and versus uv distance, which are now shown for the phase calibrator (and other calibrators when they are present).

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Home By Topic By Task	-			2018.1.01131.S
Tasks in execution order	Amplitude vs UV distance			
1. hifa_importdata	These plots show amplitude vs UV distance for two cases: 1, the	calibrated data before application of any flags; and 2, where flaggir	ng was applied, the calibrated data after application of flags.	
2. hifa_flagdata	Data are plotted for all antennas and correlations, with different c	orrelations shown in different colours		
3. hifa_fluxcalflag		orelations shown in unrelefit colours.		
4. hif_rawflagchans	uidA002_Xd98580_X354.ms			
5. hif_refant	Amp:corrected vs. UVdist Spw: 25	Amp:corrected vs. UVdist Spw: 27	Amp:corrected vs. UVdist Spw: 29	Amp:corrected vs. UVdist Spw: 31
6. h_tsyscal	14	33	33	13-
7. hifa_tsysflag	E			
8. hifa_antpos				n na transmission de la companya de
9. hifa_wvrgcalflag 10. hif_lowgainflag	66	63-	03	43
11. hif_setmodels	04	0.0	ae	
12. hifa_bandpassflag	0 50 300 820 200 200 300 300 UVidist (m)	0 50 300 330 200 250 300 350 UVdist (m)	0 50 200 200 200 200 200 200 200 Widist (m)	e 50 356 200 256 350 356 UVdast (m)
13. hifa_spwphaseup	Spectral Window 25	Spectral Window 27	Spectral Window 29	Spectral Window 31
14. hifa_gfluxscaleflag	Intents: PHASE Field: J0730-1141	Intents: PHASE Field: J0730-1141	Intents: PHASE Field: J0730-1141	Intents: PHASE Field: J0730-1141
15. hifa_gfluxscale	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.
16. hifa_timegaincal				
17. hif_applycal				1
18. hif_makeimlist	Amp:corrected vs. UVdist Spw: 33	Amp:corrected vs. UVdist Spw: 35	Amp:corrected vs. UVdist Spw: 37	Amp:corrected vs. UVdist Spw: 39
19. hif_makeimages	14	 In the second sec	14 14 10 10 20 10 10 10 10 10 10 10 10 10 10 10 10 10	14
20. hif_makeimlist				
21. hif_makeimages				
22. hifa_imageprecheck 9	66	••• · · · · · · · · · · · · · · · · · ·	04	•
23. hif_checkproductsize	04 02		64 63	01- 02
24. hifa_exportdata	0 50 200 200 200 200 200 200 200	0 20 200 250 200 250 200 250 VVdist (m)	0 00 200 200 200 200 200 200 200 200	ê sê sin sin pê zin sin sin UVMest(m)
25. hif_mstransform	Spectral Window 33	Spectral Window 35	Spectral Window 37	Spectral Window 39
26. hifa_flagtargets	Intents: PHASE Field: J0730-1141	Intents: PHASE Field: J0730-1141	Intents: PHASE Field: J0730-1141	Intents: PHASE Field: J0730-1141
27. hif_makeimlist	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.	Calibrated data before flagging.
28. hif_findcont		2010 bororo nagging.	did berere nagging.	zero o nagging.
29. hif_uvcontfit				
30. hif_uvcontsub	Amp:corrected vs. UVdist Spw: 41	Amp:corrected vs. UVdist Spw: 43	Amp:corrected vs. UVdist Spw: 45	

hifa_gfluxscale: The fluxes for the calibration sources (except the flux calibrator source itself) are compared to the values from the calibrator archive here.

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Tasks in execution order	- 1											
1. hifa_importdata	- 1	15. Phased-up fl	uvscale									BACK
2. hifa_flagdata	- 1	15. Fildseu-up il	unscale									BACK
3. hifa_fluxcalflag	- 1											
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6. h_tsyscal		 Tables. Antennas used for flux scalin 	a									
7. hifa_tsysflag	9	 Computed flux densities 	5									
8. hifa_antpos	0	Plots:										
9. hifa_wvrgcalflag		 Derived flux density vs catalo 										
10. hif_lowgainflag	9	 Flux calibrator model compari 	ison									
11. hif_setmodels		Results										
12. hifa_bandpassflag	9	Results										
13. hifa_spwphaseup		Antennas Used for Flux	Scaling									
14. hifa_gfluxscaleflag	9		0									
15. hifa_gfluxscale		The following antennas were used for flux s	scaling, entries for unresolved flux	calibrato	rs are blank							
16. hifa_timegaincal	- 1	Measurement Set					UV Range			An	ntennas	
17. hif_applycal	- 1											
18. hif_makeimlist	- 1	uidA002_Xd98580_X354.ms										
19. hif_makeimages	- 1	Antennas for Flux Calibration										
20. hif_makeimlist	- 1											
21. hif_makeimages		Computed Flux Densitie	s									
22. hifa_imageprecheck 23. hif_checkproductsize		The following flux densities were set in the	measurement set model column a	nd record	ded in the pipeline context:							
24. hifa_exportdata		-										
25. hif_mstransform						Derived Flux Density						
26. hifa_flagtargets						Catalog Flux Density						
27. hif_makeimlist						· · · · · · · · · · · · · · · · · · ·						
28. hif findcont		Measurement Set	Field	Spw	Frequency Bandwidth (TOPO)	I		Q	U	v	Flux Ratio (Derived / Catalog)	Spix
29. hif_uvcontfit		uidA002_Xd98580_X354.ms	J0730-1141 (#1) PHASE	25	218.763 GHz 58.594 MHz	806.299 mJy ± 3.699	mJy (0.5%)	0.000 Jy	0.000 Jy	0.000 Jy	0.954	0.0
30. hif_uvcontsub												
						845.000 mJy		0.000 Jy	0.000 Jy	0.000 Jy		

hifa_gfluxscale: The fluxes for the calibration sources (except the flux calibrator source itself) are compared to the values from the calibrator archive here.

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Tasks in execution order												
1. hifa_importdata	- 1	Computed Flux Densi	ties									- 1
2. hifa_flagdata	- 1	The following flux densities were set in	the measurement set model colum	n and recor	ded in the pipeline context:							- 1
3. hifa_fluxcalflag	- 1					Derived Flux Density						1
4. hif_rawflagchans	- 1											
5. hif_refant	- 1					Catalog Flux Density						
6. h_tsyscal		Measurement Set	Field	Spw	Frequency Bandwidth (TOPO)	1	Q	U	v	Flux Ratio (Derived / Catalog)	Spix	
7. hifa_tsysflag 8. hifa_antpos	9 9	uidA002_Xd98580_X354.ms	J0730-1141 (#1) PHASE	25	218.763 GHz 58.594 MHz	806.299 mJy ± 3.699 mJy (0.5%)	0.000 Jy	0.000 Jy	0.000 Jy	0.954	0.0	
9. hifa_wvrgcalflag	Ŭ.	uiuA002_A096360_A334.115	30730-1141 (#1) FHA3E	25	210.703 GHZ 30.394 MHZ	600.235 may ± 3.055 may (0.3%)	0.000 Jy	0.000 Jy	0.000 Jy	0.504	0.0	
10. hif_lowgainflag						845.000 mJy	0.000 Jy	0.000 Jy	0.000 Jy			
11. hif_setmodels	1			27	219.564 GHz 58.594 MHz	809.472 mJy ± 4.103 mJy (0.5%)	0.000 Jy	0.000 Jy	0.000 Jy	0.961		
12. hifa_bandpassflag						942 600 m kr	0.000 hr	0.000 hr	0.000 hr			
13. hifa_spwphaseup	- 1					842.600 mJy	0.000 Jy	0.000 Jy	0.000 Jy			
14. hifa_gfluxscaleflag	9			29	219.953 GHz 58.594 MHz	811.004 mJy ± 3.450 mJy (0.4%)	0.000 Jy	0.000 Jy	0.000 Jy	0.964		
15. hifa_gfluxscale						841.400 mJy	0.000 Jy	0.000 Jy	0.000 Jy			
16. hifa_timegaincal	- 1											
17. hif_applycal	- 1			31	220.402 GHz 58.594 MHz	803.930 mJy ± 3.866 mJy (0.5%)	0.000 Jy	0.000 Jy	0.000 Jy	0.957		
18. hif_makeimlist	- 1					840.000 mJy	0.000 Jy	0.000 Jy	0.000 Jy			
19. hif_makeimages	- 1			33	218.479 GHz 58.594 MHz	809.696 mJy ± 3.483 mJy (0.4%)	0.000 Jy	0.000 Jy	0.000 Jy			
20. hif_makeimlist	- 1											
21. hif_makeimages 22. hifa_imageprecheck						845.900 mJy	0.000 Jy	0.000 Jy	0.000 Jy			
23. hif_checkproductsize	Ľ.			35	217.108 GHz 58.594 MHz	814.204 mJy ± 3.510 mJy (0.4%)	0.000 Jy	0.000 Jy	0.000 Jy	0.958		
24. hifa_exportdata						850.200 mJy	0.000 Jy	0.000 Jy	0.000 Jy			
25. hif_mstransform												
26. hifa_flagtargets				37	217.242 GHz 58.594 MHz	816.442 mJy ± 3.776 mJy (0.5%)	0.000 Jy	0.000 Jy	0.000 Jy	0.961		
27. hif_makeimlist						849.800 mJy	0.000 Jy	0.000 Jy	0.000 Jy			
28. hif_findcont				39	218.226 GHz 58.594 MHz	807.943 mJy ± 3.606 mJy (0.4%)	0.000 Jy	0.000 Jy	0.000 Jy	0.954		
29. hif_uvcontfit				0,	a restand of the option of the file							
30. hif_uvcontsub						846.700 mJy	0.000 Jy	0.000 Jy	0.000 Jy			

These numbers should be close, but only if the two sets of numbers are from similar dates. The phase calibrators vary in brightness over time, so the catalog values often do not measure the derived values.

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 Link grandati <lilink gran<="" th=""><th>Tasks in execution order</th><th>Derived flux density vs catalogue flu</th><th>x density</th><th></th><th></th></lilink>	Tasks in execution order	Derived flux density vs catalogue flu	x density		
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 A. Mc.useling A. Mc.useling	2. hifa_flagdata			d flux density $S_{\rm derived}$ to the catalogue flux density $S_{\rm catalogue}$ reported by	analysisUtils, online source catalogues, and/or recorded in the
Mitgender For eich calabrater, taking with the deskode the calabraten is resonable as compared to the calabrage, measurements. All QA scores based on this netic are included in the Popeire QA section at the Lotter of this page. Mitgender Indiangender Mitgender<	3. hifa_fluxcalflag	ASDM. In these plots, S _{catalogue} is extrapolated using the spectral	ndex to cover the frequency range of the spectral windows.		
k ALgerdet h. Lysed b. L	4. hif_rawflagchans				
 Alis Lynda <	5. hif_refant	for each calibrator; it does not evaluate whether the absolute flux of	alibration is reasonable as compared to the catalogue measuremer	ts. All QA scores based on this metric are included in the Pipeline QA s	ection at the bottom of this page.
 khall who who who who who who who who who who	6. h_tsyscal	uidA002_Xd98580_X354.ms			
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30. hif_uvcontsub Baseband 1 Baseband 2 Baseband 3 Baseband 4	29. hif_uvcontfit	1.5080 J 0 50 200 100 200 200 300 350	1.1130-J 0 50 200 150 200 200 300 300 UWdist (m)	1.4833 3 0 50 500 200 200 200 300 300 Wrdink (m)	6.6.J 0.50 100 120 200 250 300 350 UVdisk (e)
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3. hifa_fluxcalflag										- 1
4. hif_rawflagchans		This task creates gain solutions fo	r each measure	ment set.						
5. hif_refant		Plots								
6. h_tsyscal		Phase vs time								
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10. hif_lowgainflag	9	 Phase vs time 								
11. hif_setmodels		 Phase offsets vs tin Amplitude vs time 	ne							
12. hifa_bandpassflag	9	o Amplitude vs time								
13. hifa_spwphaseup		Results								
14. hifa_gfluxscaleflag	9									.
15. hifa_gfluxscale			Solution Paran	neters	Applied To					
16. hifa_timegaincal		Measurement Set	Туре	Interval	Scan Intent	Spectral Windows	Calibration Table			
17. hif_applycal										
18. hif_makeimlist		uidA002_Xd98580_X354.ms	Phase only	Infinite	PHASE, CHECK, TARGET	25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45	uidA002_Xd98580_X354.ms.hifa_timegaincal.s16_3.spw25_27_29_31_33_35	5_37_39_41_43_45.solin	tinf.gpcal.tbl	
19. hif_makeimages						45				
20. hif_makeimlist		uidA002_Xd98580_X354.ms	Phase only	Per integration	AMPLITUDE, BANDPASS	25, 27, 29, 31, 33, 35, 37, 39, 41, 43,	uidA002_Xd98580_X354.ms.hifa_timegaincal.s16_4.spw25_27_29_31_33_35	5_37_39_41_43_45.solin	tint.gpcal.tbl	1
21. hif_makeimages				(6.05s)		45				
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26. hifa_flagtargets 27. hif_makeimlist					-					-
28. hif_findcont		Applied calibrations and parameter	rs used for calta	ble generation						
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1. hifa_importdata					
2. hifa_flagdata		Phase vs time			
3. hifa_fluxcalflag		Plots show the phase correction to be applied to the target source	e. A plot is shown for each spectral window, with phase correction dat	a points plotted per antenna and correlation as a function of time.	
4. hif_rawflagchans					
5. hif_refant		Click the summary plots to enlarge them, or the spectral window	heading to see detailed plots per spectral window and antenna.		
6. h_tsyscal		uidA002_Xd98580_X354.ms			
7. hifa_tsysflag	0	uidA002_Xd98580_X354 spw 25	uidA002_Xd98580_X354 spw 27	uidA002_Xd98580_X354 spw 29	uidA002_Xd98580_X354 spw 31
8. hifa_antpos	0	100	20-	130-	130
9. hifa_wvrgcalflag		50	50	(19 Jac	6 50
10. hif_lowgainflag	0	James (() erreg	0 · · · · · · · · · · · · · · · · · · ·) www.
11. hif_setmodels			500	g -30- -100-	9 -00-
12. hifa_bandpassflag	0	-150	-339	-350	-350
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10. hif_applycal		correlations.	correlations.	correlations.	correlations.
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27. hif_makeimlist		Spectral window 33	Spectral window 35	Spectral window 37	Spectral window 39
28. hif_findcont		Phase vs time for spectral window 33, all antennas and	Phase vs time for spectral window 35, all antennas and	Phase vs time for spectral window 37, all antennas and	Phase vs time for spectral window 39 , all antennas and
29. hif_uvcontfit		correlations.	correlations.	correlations.	correlations.
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Tasks in execution order	- 1				
1. hifa_importdata	- 1	Phase structure: phase RMS vs dist	ance to reference antenna		
2. hifa_flagdata	- 1	Plots are generated per spectral window, with phase RMS data po	pints per antenna and correlation as a function of distance from the re	eference antenna. The phase RMS is calculated as the RMS of the pha	se correction measured over all scans with phase observing
3. hifa_fluxcalflag	- 1	intent.			
4. hif_rawflagchans	- 1	Click the summary plots to enlarge them.			
5. hif_refant	- 1	uidA002_Xd98580_X354.ms			
6. h_tsyscal	. I				
7. hifa_tsysflag	9	Note that no spectral windows have been combined or remapped			
8. hifa_antpos	9	SPM 25 Conventions X and Y All Antennas Scans 6 and 9	SPIR 27 Conventions II and V All Antennas Scans E and 9 and	SPW 29 Centellows X and Y All Antennes Scano 6 and 9 Se	STRE 31, Conventions X and Y AR Arbenhas Scans 6 and 9 and
9. hifa_wvrgcalflag		04			
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11. hif_setmodels 12. hifa_bandpassflag			and the second se		
13. hifa_spwphaseup	×	e Com	C C	- Energy Contract of Contract	
14. hifa_gfluxscaleflag					Trinera bilance bilance bila bilance
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16. hifa_timegaincal		Spectral window 25	Spectral window 27	Spectral window 29	Spectral window 31
17. hif_applycal		RMS phase vs distance to reference antenna for spectral	RMS phase vs distance to reference antenna for spectral	RMS phase vs distance to reference antenna for spectral	RMS phase vs distance to reference antenna for spectral
18. hif_makeimlist	- 1	window 25, all antennas.	window 27, all antennas.	window 29, all antennas.	window 31, all antennas.
19. hif_makeimages	- 1				
20. hif_makeimlist	- 1	SPW 33 Committees X and Y	578-31 Constitutes X and Y All Anternas Science 4 and 9	SPW 37 Constations X and Y All Antennas Science 6 and 9	SPR 31 Comparison X and Y all Arborrage Scans 1 and 9
21. hif_makeimages	- 1			16	10 *
22. hifa_imageprecheck	9	1 mage 1		(au.	j
23. hif_checkproductsize	- 1	and the second se	10 000 mm4	And the second se	
24. hifa_exportdata			P P	(formation)	
25. hif_mstransform					
26. hifa_flagtargets		Distance to Automa Bridd (a)	Costance to Reference Briddy (m)	Distance to Induced additional disk (m)	Distance to Reference address disk4 (re)
27. hif_makeimlist		Spectral window 33	Spectral window 35	Spectral window 37	Spectral window 39
28. hif_findcont		•	•		
29. hif_uvcontfit		RMS phase vs distance to reference antenna for spectral window 33, all antennas.	RMS phase vs distance to reference antenna for spectral window 35, all antennas.	RMS phase vs distance to reference antenna for spectral window 37, all antennas.	RMS phase vs distance to reference antenna for spectral window 39 , all antennas.
30. hif_uvcontsub		million va, dii dillerinas.	militari ee, all alitellilae.	mingon ov, all antennas.	mindom ov, un dilicilitas.

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Home By Topic By Task				2018.1.01131.S
Tasks in execution order	Annu literature aliment			
1. hifa_importdata	Amplitude vs time			
2. hifa_flagdata	Plots show the amplitude calibration to be applied to the target sour	ce. A plot is shown for each spectral window, with amplitude correct	ion data points per antenna and correlation as a function of time.	
3. hifa_fluxcalflag	Click the summary plots to enlarge them, or the spectral window he	ading to see detailed plots per spectral window and antenna.		
4. hif_rawflagchans	uidA002_Xd98580_X354.ms			
5. hif_refant	uidA002_Xd98580_X354 spw 25	uidA002_Xd98580_X354 spw 27	uidA002_Xd98580_X354 spw 29	uidA002_Xd98580_X354 spw 31
6. h_tsyscal	0.125	0.125	0.135	0.125
7. hifa_tsysflag	6.199-	0.129-	0.139	6.170
8. hifa_antpos	6.340	0.000 0.000	0.300 0.300	0.100 0 1.100
9. hifa_wvrgcalflag	0.135-	0.235-	0.235	3
10. hif_lowgainflag 🛛 🕘	6.156	0.150-	0.339	6330
11. hif_setmodels	110-1 110-00 Elocos endere estance estance estance estance estance estance Elocos Elocos (endere estance estance estance) (estance) (estance)	0.180 0.1000 01.0500 01.0500 01.2500 01.2500 01.2500 02.1600 02.1600 02.2500 Time (from 2015/007/44) (Microsova)	0.100 01.0000 01.0000 01.0000 01.2000 01.2000 01.2000 01.2000 Time (from 2013/00114) (dhummas)	114- 2.0400 52.0500 00 201000 00 2000 00 2000 00 2000 00 2000 00 2000 Time (from 2010/02/14) (bhirmina)
12. hifa_bandpassflag 🛛 😶				
13. hifa_spwphaseup	Spectral window 25	Spectral window 27	Spectral window 29	Spectral window 31
14. hifa_gfluxscaleflag	Amplitude vs time for spectral window 25, all antennas	Amplitude vs time for spectral window 27, all antennas	Amplitude vs time for spectral window 29, all antennas	Amplitude vs time for spectral window 31, all antennas
15. hifa_gfluxscale	and correlations.	and correlations.	and correlations.	and correlations.
16. hifa_timegaincal				
17. hif_applycal	uid_A002_Xd98580_X354 spw 33	uidA002_Xd98580_X354 spw 35	uidA002_Xd98580_X354 spw 37	uidA002_Xd98580_X354 spw 39
18. hif_makeimlist	0.376			6.3%
19. hif_makeimages	0.174	0.390	0.370-	6199-
20. hif_makeimlist	6 139- 4	0 9 0.265	4 0 353 -	6.19-
21. hif_makeimages	0.266	3	3	0.100
22. hifa_imageprecheck 0	0.154	0.500-	0.380	0.154
23. hif_checkproductsize	1316) 13.04/00 15.04/00 15.04/00 15.02/00 15.04/00 15.04/00 15.04/00 15.04/00 15.04/00 15.04/00 15.04/00 15.04/00 15.04/00 15.04/00 15.04/00	0.155 0.10600 01.06000 01.2000 01.2000 01.2000 01.0000 01.0600 01.2000 01.2000 Time (from 2015/00/146 (Mcremeta)	0.333 01,0400 02,0400 02,0600 03,0000 02,0400 03,0400 03,0500 03,0500 Time (frem 2023/00/14) (dhummas)	1010- 0.0600 500 500 50 1000 51 1000 53 1000 53 1000 53 1000 53 1000 52 1000 Time (free 2016/02/24) (https://www.sa)
24. hifa_exportdata				
25. hif_mstransform	Spectral window 33	Spectral window 35	Spectral window 37	Spectral window 39
26. hifa_flagtargets	Amplitude vs time for spectral window 33, all antennas	Amplitude vs time for spectral window 35, all antennas	Amplitude vs time for spectral window 37, all antennas	Amplitude vs time for spectral window 39, all antennas
27. hif_makeimlist	and correlations.	and correlations.	and correlations.	and correlations.
28. hif_findcont 29. hif_uvcontfit				
	uidA002_Xd98580_X354 spw 41	uidA002_Xd98580_X354 spw 43	uidA002_Xd98580_X354 spw 45	
30. hif_uvcontsub			A172	

hifa_applycal: This step applies the calibration tables and created plots of the phases and amplitudes afterwards. Any unexpected outliers in these plots will need to be identified and flagged.

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Tasks in execution order													
1. hifa_importdata		17 Annhuad	:		hlas								
2. hifa_flagdata		17. Apply ca	lipr	ation ta	Dies								BACK
3. hifa_fluxcalflag													
4. hif_rawflagchans		This task applies all calibrations	rogietor	ad with the nineline	to their target	mageurament eate							
5. hif_refant		This task applies all calibrations	register	a waar ale pipeline	to their target i	nedaurennent aeta.							
6. h_tsyscal		Contents											
7. hifa_tsysflag	θ												
8. hifa_antpos	θ	Applied calibrations Flagged data after calibration	tion ann	lication									
9. hifa_wvrgcalflag		Plots	uon app	Cation									
10. hif_lowgainflag	9	 Calibrated amplitude 	de vs fre	quency									
11. hif_setmodels		 Calibrated phase v 	s freque	ncy									
12. hifa_bandpassflag	9	 Calibrated amplitud 											
13. hifa_spwphaseup		 Calibrated amplitud 		.e									
14. hifa_gfluxscaleflag	9	 Calibrated phase v (Corrected amplitu 		dal) ve antanna									
15. hifa_gfluxscale		 (Corrected amplitu) (Corrected amplitu) 											
16. hifa_timegaincal		 Science target: cal 											
17. hif_applycal		 Science target: cal 	ibrated a	amplitude vs UV die	stance								
18. hif_makeimlist		 UV coverage 											
19. hif_makeimages													
20. hif_makeimlist		Applied calibrat	tion	\$									
21. hif_makeimages		The Fields column lists fields wit	hin the r	neasurement set c	ontaining any c	f the intents listed in the /	ntents colu	mn. If a field na	me is ambiguous and does not uniquely identify a field, e.g., when a field is observed with	multiple inter	nts, then the una	mbiguous f	field ID is
22. hifa_imageprecheck	9	listed instead of the field name. T	The orde	of entries in the F	ields and Inten	ts columns has no signific	ance.						
23. hif_checkproductsize		Measurement Set		Target				Calibration					
24. hifa_exportdata				ruiget				ounoration					
25. hif_mstransform			Final	1-44	ei-Id-	0						but	
26. hifa_flagtargets		Name	Size	Intent	Fields	Spw	Antenna	туре	spwmap	gainfield	interp	calwt	t table
27. hif_makeimlist		uidA002_Xd98580_X354.ms		TARGET	Z_CMa	25, 27, 29, 31, 33, 35,	0~47	T _{sys}	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 17, 19, 21, 23, 17, 17, 19, 19, 21, 21, 23, 23, 17 , 17,	nearest	linear, linear	True	Filename
28. hif_findcont			GB			37, 39, 41, 43, 45			17, 17, 17, 17, 17, 17, 19, 19, 19, 19, 19, 19, 19, 19, 19, 21, 21, 21, 21, 23, 23				
29. hif_uvcontfit								antpos				False	e Filename
30. hif_uvcontsub								WVR			nearest	False	e Filename

The amplitudes versus frequency, versus uv distance, and versus time should be mostly flat for the calibration sources (but not necessarily for science targets or planetary objects). However, the scatter in the amplitudes may increase where atmospheric transmission decreases.

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Home By Topic By Task				2018.1.01131.S
Tasks in execution order				
1. hifa_importdata	Plots			
2. hifa_flagdata	Calibrated amplitude vs frequency			
3. hifa_fluxcalflag				
4. hif_rawflagchans	Plots of calibrated amplitude vs frequency for all antennas and co	rrelations, coloured by antenna. The atmospheric transmission for each	n spectral window is overlayed on each plot in pink.	
5. hif_refant	uidA002_Xd98580_X354.ms			
6. h_tsyscal	Amp:corrected, Atm Transmission vs. Frequency Spw: 25	Amp:corrected, Atm Transmission vs. Frequency Spw: 27	Amp:corrected, Atm Transmission vs. Frequency Spw: 29	Amp:corrected, Atm Transmission vs. Frequency Spw: 31
7. hifa_tsysflag	20	20	28	20
8. hifa_antpos	and the second s			
9. hifa_wvrgcalflag	14- N. 1997 (1997) (199		14	14
10. hif_lowgainflag		*** •*********************************	*** ·*********************************	°i − Tanan kanan kana
11. hif_setmodels 12. hifa_bandpassflag	12-00	12	12	12
	2.5.7 238.750 228.740 228.750 228.790 228.790 228.790 228.790 228.800 Frequency (GHz) TOPO	235.530 215.540 225.550 225.540 225.550 225.540 225.590 225.590 225.500 Frequency (Gitz) TOPO	10-2 215.900 220.900 215.900 215.500 225.900 215.970 215.900 225.900 Frequency (GHz) TOPO	107 220.370 220.300 220.300 220.400 220.400 220.400 220.400 Frequency (GHz) TOPO
13. hifa_spwphaseup 14. hifa_gfluxscaleflag	Spw 25 ALMA Band 6	Spw 27 ALMA Band 6	Spw 29 ALMA Band 6	Spw 31 ALMA Band 6
15. hifa_gfluxscale	Amplitude calibrator: J0538-4405,	Amplitude calibrator: J0538-4405.	Amplitude calibrator; J0538-4405,	Amplitude calibrator: J0538-4405,
16. hifa_timegaincal	Ampirade campator. 50556-4405.	Ampirtude cambrator, 50550-4400.	Ampiliade Calibrator, 50550-4405,	Amplitude calibrator. 50550-4405.
17. hif_applycal				
18. hif_makeimlist	Amp:corrected, Atm Transmission vs. Frequency Spw: 33	Amp:corrected, Atm Transmission vs. Frequency Spw: 35	Amp:corrected, Atm Transmission vs. Frequency Spw: 37	Amp:corrected, Atm Transmission vs. Frequency Spw: 39
19. hif_makeimages	20-	2.8	2.0	20
20. hif_makeimlist	the second	144	18 Martin Contraction Contraction Contraction	14 Perton State
21. hif_makeimages				14- -
22. hifa_imageprecheck	- 2	· · ·	14 Martin Martin Martin 199	 Manual contraction of the second secon
23. hif_checkproductsize	12-00	12	12-	12
24. hifa_exportdata	10 221440 228450 228450 228490 228490 228490 228500 228550 228550 Frequency (GHz) TOPO	217/00 237/00 232/00 221/30 277/33 237/30 227/30 227/30 227/30 237/30 20	21720 21720 21720 21720 21720 21720 21720 21720 21720 21720 21720	20 215.290 228.200 238.220 238.220 238.220 238.290 238.200 238.200 238.200 238.200
25. hif_mstransform	Spw 33	Spw 35	Spw 37	Spw 39
26. hifa_flagtargets	ALMA Band 6	ALMA Band 6	ALMA Band 6	ALMA Band 6
27. hif_makeimlist	Amplitude calibrator: J0538-4405.	Amplitude calibrator: J0538-4405.	Amplitude calibrator: J0538-4405.	Amplitude calibrator: J0538-4405.
28. hif_findcont				
29. hif_uvcontfit	Amp:corrected, Atm Transmission vs. Frequency Spw: 41	Amp:corrected, Atm Transmission vs. Frequency Spw: 43	Amp:corrected, Atm Transmission vs. Frequency Spw: 45	
30. hif_uvcontsub	22	22	22	

The phases for the calibration sources should be equivalent to 0.

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Home By Topic By Task	-			2018.1.01131.S
Tasks in execution order	Calibrated phase vs frequency			
1. hifa_importdata				
2. hifa_flagdata	Plots of calibrated phase vs frequency for all antennas and correla	ations, coloured by antenna.		
3. hifa_fluxcalflag	uidA002_Xd98580_X354.ms			
4. hif_rawflagchans	Phase:corrected vs. Frequency Spw: 25	Phase:corrected vs. Frequency Spw: 27	Phase:corrected vs. Frequency Spw: 29	Phase:corrected vs. Frequency Spw: 31
5. hif_refant				
6. h_tsyscal				
7. hifa_tsysflag				
8. hifa_antpos		000		
9. hifa_wvrgcalflag	- 39 -		-30-	
10. hif_lowgainflag 9	218/290 228.M0 228/293 228/290 228/270 228/290 228/290 228.000 Prequency (GMa) 700	215.500 216.540 226.550 2255.500 215.570 226.500 215.500 215.500 Frequency (0Hz) TOPO	215.520 225.550 225.550 225.550 225.550 225.570 225.590 225.590 Frequency (GHz) TOPO	220.370 220.380 220.390 220.400 220.410 220.400 220.400 220.400 Frequency (GHz) TOPO
11. hif_setmodels	Spectral Window 25	Spectral Window 27	Spectral Window 29	Spectral Window 31
12. hifa_bandpassflag 9	ALMA Band 6	ALMA Band 6	ALMA Band 6	ALMA Band 6
13. hifa_spwphaseup	Bandpass calibrator: J0538-4405.	Bandpass calibrator: J0538-4405.	Bandpass calibrator: J0538-4405.	Bandpass calibrator: J0538-4405.
14. hifa_gfluxscaleflag				
15. hifa_gfluxscale				
16. hifa_timegaincal	Phase:corrected vs. Frequency Spw: 33	Phase:corrected vs. Frequency Spw: 35	Phase:corrected vs. Frequency Spw: 37	Phase:corrected vs. Frequency Spw: 39
17. hif_applycal	3 ⁵⁰	g ***	£ 10-	3 ³⁰
18. hif_makeimlist				
19. hif_makeimages				
20. hif_makeimlist	R and a second sec		M	
21. hif_makeimages				
22. hifa_imageprecheck	238-440 228-550 238-859 238-459 238-450 238-550 228-530	211/09 211/09 222/09 221/10 21110 21120 21130 21130 21130	21720 21720 21720 21720 21720 21720 21720 21720 21720 21720	238.290 228.200 238.200 228.200 PT 500 PT 50
23. hif_checkproductsize	Spectral Window 33	Spectral Window 35	Spectral Window 37	Spectral Window 39
24. hifa_exportdata 25. hif_mstransform	ALMA Band 6	ALMA Band 6	ALMA Band 6	ALMA Band 6
26. hifa_flagtargets	Bandpass calibrator: J0538-4405.	Bandpass calibrator: J0538-4405.	Bandpass calibrator: J0538-4405.	Bandpass calibrator: J0538-4405.
27. hif_makeimlist				
28. hif_findcont	Phase:corrected vs. Frequency Spw: 41	Phase:corrected vs. Frequency Spw: 43	Phase:corrected vs. Frequency Spw: 45	
29. hif_uvcontfit				
30. hif_uvcontsub	2 30-	C 1991	5 00 -	
			99.) p	

This module also produces plots of the amplitude/model flux ratios versus antenna and uv distance. These should be close to 1. Any antenna exhibiting excess scatter in these plots needs to be checked carefully and may need to be flagged.

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Home By Topic	By Task	_			2018.1.01131.S
Tasks in execution order					
1. hifa_importdata		(Corrected amplitude / model) vs ant	enna		
2. hifa_flagdata		Plots of the ratio of the corrected amplitude to the model column va	alue versus antenna ID. Data are coloured by antenna and are show	n for all antennas and correlations.	
3. hifa_fluxcalflag		uidA002_Xd98580_X354.ms			
4. hif_rawflagchans					
5. hif_refant		Plots for AMPLITUDE calibration intent were created with UV range		-	
6. h_tsyscal		Amp:corrected/model (vector) vs. Antenna1 Spw: 25	Amp:corrected/model (vector) vs. Antennal Spw: 27	Amp:corrected/model (vector) vs. Antenna1 Spw: 29	Amp:corrected/model (vector) vs. Antennal Spw: 31
7. hifa_tsysflag	0	5 ¹²	14-	14	
8. hifa_antpos	0				
9. hifa_wvrgcalflag	θ				
10. hif_lowgainflag 11. hif_setmodels	, and the second			0106	
12. hifa_bandpassflag	θ		84	04	
13. hifa_spwphaseup	Ů	0 10 20 20 40 Antennal 20 40	0 10 20 30 40 40 Antennal	0 20 20 20 40 40 Antennal	0 30 20 40 40 40 Antenna 3
14. hifa_gfluxscaleflag	0	Spectral Window 25 ALMA Band 6	Spectral Window 27 ALMA Band 6	Spectral Window 29 ALMA Band 6	Spectral Window 31 ALMA Band 6
15. hifa_gfluxscale		Intents: AMPLITUDE	Intents: AMPLITUDE	Intents: AMPLITUDE	Intents: AMPLITUDE
16. hifa_timegaincal		Fields: J0538-4405	Fields: J0538-4405	Fields: J0538-4405	Fields: J0538-4405
17. hif_applycal					
18. hif_makeimlist		Amp:corrected/model (vector) vs. Antennal Spw: 33	Amp:corrected/model (vector) vs. Antenna1 Spw: 35	Amp:corrected/model (vector) vs. Antennal Spw: 37	Amp:corrected/model (vector) vs. Antennal Spw: 39
19. hif_makeimages			34		
20. hif_makeimlist			30 10 12		inidation abadain hadidaa it
21. hif_makeimages					
22. hifa_imageprecheck	9				
23. hif_checkproductsize		4 a.c.	1 06	4.05	2
24. hifa_exportdata		0.4.] 0.1.0.20 Asternal	0 20 20 20 40	041 20 20 20 40	64. 0 20 20 20 40 40
25. hif_mstransform		Spectral Window 33	Spectral Window 35	Spectral Window 37	Spectral Window 39
26. hifa_flagtargets		ALMA Band 6	ALMA Band 6	ALMA Band 6	ALMA Band 6
27. hif_makeimlist		Intents: AMPLITUDE	Intents: AMPLITUDE	Intents: AMPLITUDE	Intents: AMPLITUDE
		Fields: J0538-4405	Fields: J0538-4405	Fields: J0538-4405	Fields: J0538-4405
30. hif_uvcontsub			Amp:corrected/model (vector) vs. Antennal Spw: 43	Ampcorrected/model (vector) vs. Antennal Spw: 45	
28. hif_findcont 29. hif_uvcontfit					

hif_makeimages: When this is first called, it makes continuum images of each calibrator in each spw for quality assessment. If the images do not look like point sources or if artefacts are present, the calibration may need to be repeated with additional flagging. Beam sizes are calculated here.

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Home By Topic By	y Task						2018.1.01131.S				
Tasks in execution order							•				
1. hifa_importdata		10 Toloon/M	kolmogoo								
2. hifa_flagdata		19. Tclean/MakeImages									
3. hifa_fluxcalflag		Make calibrator image	25				BACK				
4. hif_rawflagchans											
5. hif_refant		Imaga Dataila									
6. h_tsyscal		Image Details									
7. hifa_tsysflag	9	Field	Spw	Pol	Image details		Image result				
8. hifa_antpos	0	J0538-4405 (BANDPASS)	25 / X1494769907#ALMA_RB_06#BB_1#SW-01	I	centre frequency of image	218.7861GHz (LSRK)	Pape-image digitizy-mean feeta/0530-4405 spic/25 ker 1				
9. hifa_wvrgcalflag 10. hif_lowgainflag	9										
11. hif_setmodels					beam	1.51 x 0.956 arcsec	-				
12. hifa_bandpassflag											
13. hifa_spwphaseup					final theoretical sensitivity	0.00042 Jy/beam	-				
14. hifa_gfluxscaleflag	0				cleaning threshold	0.0027 Jy/beam					
15. hifa_gfluxscale					cleaning uneshold	Dirty DR: 3.6e+03	Rept Accessor (arcsec) and area (arcsec) area (arcsec) area (arcsec) (arcsec) area (arcsec) (
16. hifa_timegaincal						DR correction: 3.2	View other QA images				
17. hif_applycal					clean residual peak / scaled MAD	4.58					
18. hif_makeimlist					non-pbcor image RMS	0.00057 Jy/beam					
19. hif_makeimages											
20. hif_makeimlist					pbcor image max / min	1.51 / -0.00505 Jy/beam					
21. hif_makeimages 22. hifa_imageprecheck	9				fractional bandwidth / nterms	0.027% / 1					
23. hif_checkproductsize	× I				aggregate bandwidth	0.0586 GHz (LSRK)					
24. hifa_exportdata					score	1.00	-				
25. hif_mstransform	- 1				score	1.00					
26. hifa_flagtargets					image file	uidA001_X135b_X6b.s19_0.J0538-	4405_bp.spw25.mfs.l.iter1.image				
27. hif_makeimlist		J0538-4405 (BANDPASS)	27 / X1494769907#ALMA_RB_06#BB_1#SW-02	I	centre frequency of image	219.5866GHz (LSRK)	Type:image_displaymean_feld(0530-4405_spec27_tor1]				
28. hif_findcont					beam	1.51 x 0.952 arcsec					
29. hif_uvcontfit											
30. hif_uvcontsub					beam p.a.	89.7deg					

hifa_imageprecheck: This module estimates beam sizes using different robust factors for imaging, which is useful to refer to when re-imaging the data. The row in green is selected for subsequent imaging steps.

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Tasks in execution order												
1. hifa_importdata	- 1	00 1										1 I
2. hifa_flagdata	- 1	22. In	lage Pr	e-Check							BACK	
3. hifa_fluxcalflag	- 1											. 1
4. hif_rawflagchans	- 1											1 I
5. hif_refant	- 1	Task notifica	tions									- 1
6. h_tsyscal	- 1	9 OA Robust	t cannot achieve th	e PI requested range for one or both axes, due to ar	elliptical beam, but the best match robust +0	0.5 (%Diff from mean AR = 4.1%), does produce	e a predicted beam area tha	at is within the range of re	quested beam are	eas.		
7. hifa_tsysflag	0			·····, ····,		(- 1
8. hifa_antpos	0	Goals From	n OT:									- 1
9. hifa_wvrgcalflag	- 1	Representative	Target: 7 CMa									- 1
10. hif_lowgainflag			Frequency: 218.49	53 GHz (SPW 33)								- 1
11. hif_setmodels			Sensitivity: 2578 MI									- 1
12. hifa_bandpassflag			-	0.850 arcsec / 1.28 arcsec								- 1
13. hifa_spwphaseup	Ĭ.	Goal PI sensiti	vity: 13.7 mJy									- 1
14. hifa_gfluxscaleflag		Single Continu	um: False									- 1
15. hifa_qfluxscale	Ů.	Estimated	Synthesized B	eam and Sensitivities for the Represen	ntative Target/Frequency							- 1
16. hifa_timegaincal	- 1	Estimates are o	given for five possil	le values of the tclean robust weighting parameter	robust = -0.5, 0.0, +0.5 (default), +1.0, and +2	2.0. If the "Min / Max Acceptable Resolution" is	available (>=Cycle 5 12m-	array data), the robust va	lue closest to the	default (+0./	.5) that	- 1
17. hif_applycal	- 1	predicts a bear	m that is in range of	the PI request (for both axes) according to the tab	le row for repBW (Bandwidth for Sensitivity) is	s chosen. If no robust value predicts a beam th	nat is in range, the robust is	chosen that yields the lov	west "%Diff from	mean AR" va	alue for the	- 1
18. hif makeimlist	- 1	repBW (Bandw	idth for Sensitivity)	rows. The %Diff from mean AR is defined as the p	ercent difference between the predicted bear	m area and the beam area of the geometric me	an (mean AR) of the PI requ	uested range. When the "N	vlin / Max Accepta	able Resoluti	lion" is not	
19. hif_makeimages	- 1			0.5 is used. The chosen robust value is highlighted i								-
20. hif_makeimlist	- 1			width (aggBW) is also given assuming NO line con								_
21. hif_makeimages	- 1			otherwise the beam is predicted for the repSPW al messages appear on this page.	one. A message appears on the By Task View	w if a non-default value of robust (i.e., not +0.5) is chosen. Additionally, if t	ne predicted beam is not	within the Pi requ	ested range	using one	- 1
22. hifa_imageprecheck	0											-
23. hif_checkproductsize		These estimate	es should always b	e considered as the BEST CASE SCENARIO. These	e estimates account for Tsys, the observed u	v-coverage, and prior flagging. The estimates [00 NOT account for (1) sub	sequent science target fl	agging; (2) loss of	f continuum	bandwidth	1
24. hifa_exportdata		due to the hif_f	indcont process (i.e	e. removal of lines and other spectral features from	the data used to image the continuum); (3) Is	ssues that affect the image quality like (a) poo	or match of uv-coverage to i	mage complexity; (b) dyna	amic range effect	:s; (c) calibra	ation	-
25. hif_mstransform		deficiencies (p	oor phase transfer,	residual baseline based effects, residual antenna j	position errors, etc.).							-
		robust	uvtaper	Synthesized Beam	%Diff from mean AR	cell	bandwidth	bwmode B	Effective Sensitiv	ity		- 1
26. hifa_flagtargets 27. hif_makeimlist		0.5	Π	1 15 x 0.761 arosos @ 00.0 dag	10.2%	0.15 × 0.15 στοσοσ	2570 MU-	ron PIM (0.020.05 h/k			
27. hit_makermist 28. hit_findcont		-0.5	Ш	1.15 x 0.761 arcsec @ -90.0 deg	-19.3%	0.15 x 0.15 arcsec	2578 MHz	repBW 9	9.92e-05 Jy/beam			
28. htf_tindcont 29. htf_uvcontfit		-0.5	0	1.15 x 0.761 arcsec @ -90.0 deg	-19.3%	0.15 x 0.15 arcsec	2578 MHz	aggBW g	9.92e-05 Jy/beam	1		- 1
29. htt_uvcontrit		0.0	Π	1 20 x 0 800 arcsec @ -88 7 dec	-11.5%	0.16 x 0.16 arcsec	2578 MHz	renBW	7 03e-05 . lv/beam			- 1

hifa_imageprecheck: This module estimates beam sizes using different robust factors for imaging, which is useful to refer to when re-imaging the data. The row in green is selected for subsequent imaging steps.

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Tasks in execution order	1.1	of the five robu	ist values, Warning	nessages appear on this page.							- 1
1. hifa_importdata		These estimate	ee ehould alwave h	e considered as the BEST CASE SCENARIO. The	a astimates account for Teys the observed up	w.coverage and prior flagging. The estimates	DO NOT account for (1)	subsequent science tai	raet flagging: (2) loss of continue	ım bandwidt	h
2. hifa_flagdata			-	removal of lines and other spectral features from							
3. hifa_fluxcalflag	1.	deficiencies (p	oor phase transfer,	residual baseline based effects, residual antenna	position errors, etc.).						
4. hif_rawflagchans		robust	uvtaper	Synthesized Beam	%Diff from mean AR	cell	bandwidth	bwmode	Effective Sensitivity		
5. hif_refant											- 1
6. h_tsyscal		-0.5	0	1.15 x 0.761 arcsec @ -90.0 deg	-19.3%	0.15 x 0.15 arcsec	2578 MHz	repBW	9.92e-05 Jy/beam		- 1
	9 9	-0.5	0	1.15 x 0.761 arcsec @ -90.0 deg	-19.3%	0.15 x 0.15 arcsec	2578 MHz	aggBW	9.92e-05 Jy/beam		- 1
9. hifa_wvrgcalflag		0.0	0	1.20 x 0.800 arcsec @ -88.7 deg	-11.5%	0.16 x 0.16 arcsec	2578 MHz	repBW	7.03e-05 Jy/beam		- 1
	9										- 1
11. hif_setmodels		0.0	0	1.20 x 0.800 arcsec @ -88.7 deg	-11.5%	0.16 x 0.16 arcsec	2578 MHz	aggBW	7.03e-05 Jy/beam		
	9	0.5	0	1.30 x 0.868 arcsec @ -87.6 deg	4.1%	0.17 x 0.17 arcsec	2578 MHz	repBW	5.89e-05 Jy/beam		
13. hifa_spwphaseup		0.5	0	1.30 x 0.868 arcsec @ -87.6 deg	4.1%	0.17 x 0.17 arcsec	2578 MHz	aggBW	5.89e-05 Jy/beam		
	9	1.0	Π	1.41 x 0.949 arcsec @ -86.7 deg	23.4%	0.19 x 0.19 arcsec	2578 MHz	repBW	5.52e-05 Jy/beam		1 I
15. hifa_gfluxscale		1.0	U	1.41 X 0.545 alcsec (b -00.7 deg	23.4%	0.19 x 0.19 alcsec	2376 WILL	терот	3.32e-03 3y/beam		- 1
16. hifa_timegaincal		1.0	0	1.41 x 0.949 arcsec @ -86.7 deg	23.4%	0.19 x 0.19 arcsec	2578 MHz	aggBW	5.52e-05 Jy/beam		_ 1
17. hif_applycal 18. hif_makeimlist		2.0	0	1.45 x 0.983 arcsec @ -86.4 deg	31.5%	0.2 x 0.2 arcsec	2578 MHz	repBW	5.49e-05 Jy/beam		
19. hif_makeimages		2.0	Π	1.45 x 0.983 arcsec @ -86.4 deg	31.5%	0.2 x 0.2 arcsec	2578 MHz	oggDW/	5.49e-05 Jy/beam		- 1
20. hif_makeimlist		2.0	U	1.45 X 0.983 arcsec @ -86.4 deg	31.5%	0.2 X 0.2 arcsec	2578 MHZ	aggBW	5.49e-05 Jy/beam		- 1
21. hif_makeimages		Diseline O									1 I
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23. hif_checkproductsize		Input Para	meters								- 1
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26. hifa_flagtargets		CASA logo	s for stage 22								1 I
27. hif_makeimlist		CASA logs	s for stage 22								11
28. hif_findcont		View	or download stage	22/casapy.log (347.2 KB)							
29. hif_uvcontfit											
30. hif_uvcontsub											

hif_findcont: This is where the pipeline creates initial image cubes and identifies continuum channels. This is useful as a first look at the spectra, although re-imaging the data will be much more effective for identifying spectral lines.

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16. hifa_timegaincal		Z_CMa	25	218.76447 GHz	218.78340 GHz	LSRK	NEW	18.17 20.47 13.49 20.49 20.49 20.48 20.46 based biologic-field-risk structures 3.99 20.49 20.41 20.49 20.45 based biologic-field-risk structures 3.99 20.49 20.41 20.49 20.45 based biologic-field-risk structures 3.99 20.49 20.41 20.49 20.46 based biologic-field-risk structures 3.99 20.49 20.41 20.49 20.41 based biologic-field-risk structures 3.99 20.42 20.41 20.49 20.41 based biologic-field-risk structures 3.99 20.41 20.49 20.41 20.49 based biologic-field-risk structures 3.99 20.41 20.49 20.41 20.41 based biologic-field-risk structures 3.99 20.41 20.41 20.41 20.41 20.41 based biologic-field-risk structures 3.99 20.41 20.41 20.41 20.41 20.41 20.41 20.41 20.41 20.41 20.41 20.41			
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18. hif_makeimlist				218.78645 GHz	218.81722 GHz						
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23. hif_checkproductsize								beeningemeinden von samme-substration gegenall (in el. 2019) 2001-112, diversa and in passed a met al. Stratist, wire in stratist, one in stratist (in the stratist stratist, stratistic stratistica stratisti stratistica strati			
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hif_makeimages: Several steps near the end of the pipeline (for multiple different types of output images) have this name. These pages are useful for seeing an overview of the imaging results, particularly with regards to information like beam sizes and noise levels.

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8. hifa_antpos											
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17. hif_applycal											
18. hif_makeimlist				beam	1.37 x 0.924 arcsec						
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22. hifa_imageprecheck			cleaning threshold	cleaning threshold	0.0016 Jy/beam Dirty DR: 76	Right Aucencon (arcsec)	Investion of the International States of the Internationa				
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27. hif_makeimlist				non-pbcor image RMS	0.00048 Jy/beam						
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29. hif_uvcontfit				fractional bandwidth / nterms	0.026% / 1						
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31. hif_makeimages				aggregate bandwidth	0.0505 GHz (LSRK)						
32. hif_makeimlist				score	1.00						
33. hif_makeimages				image file	uidA001_X135b_X6b.s31_0.Z_CMa_sci.	spw25.mfs.l.iter1.image					
34. hif_makeimlist		Type:image display.mean field Z_CMs spec27 iter:1									
35. hif_makeimages	Z_CMa (TARGET)	27 / X1494769907#ALMA_RB_06#BB_1#SW-02	I	centre frequency of image	219.5934GHz (LSRK)	type:mage displaymean tero #_CMs spe27 ter1					
36. hif_makeimlist				beam	1.36 x 0.915 arcsec						
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hif_makeimages: Several steps near the end of the pipeline (for multiple different types of output images) have this name. These pages are useful for seeing an overview of the imaging results, particularly with regards to information like beam sizes and noise levels.

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17. hif_applycal	(TARGET)	02,X1494769907#ALMA_RB_06#BB_1#SW-03,X1494769907#ALMA_RB_06#BB_1#SW-04,X1494769907#ALMA_RB_06#BB_2#SW-		frequency of						
18. hif_makeimlist		01,X1494769907#ALMA_RB_06#BB_2#SW-02,X1494769907#ALMA_RB_06#BB_2#SW-03,X1494769907#ALMA_RB_06#BB_2#SW-		image						
19. hif_makeimages		04,X1494769907#ALMA_RB_06#BB_3#SW-01,X1494769907#ALMA_RB_06#BB_3#SW-02,X1494769907#ALMA_RB_06#BB_4#SW-01		beam	1.26 x 0.858 arcsec	t t t t t t t t t t t t t t t t t t t				
20. hif_makeimlist					6e-05 Jy/beam ical	Part = Part =				
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24. hifa_exportdata				Sensitivity						
25. hif_mstransform				cleaning	0.00043 Jy/beam					
26. hifa_flagtargets				threshold	Dirty DR: 5.3e+02 DR correction: 3.5					
27. hif_makeimlist										
28. hif_findcont				clean residual peak / scaled	2.89					
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16. hifa_timegaincal	Z_CMa (TARGET)	25 / X1494769907#ALMA_RB_06#BB_1#SW-01	I	centre / rest frequency of cube	218.7932GHz / 218.7601GHz (LSRK)	type image display peak line int, (ment) field 2, CMa spec 25 der:1						
17. hif_applycal 18. hif_makeimlist				beam	1.37 x 0.925 arcsec							
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29. hif_uvcontfit				channels	478 x 0.1221MHz (LSRK)							
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35. hif_makeimages				beam	1.37 x 0.916 arcsec							
36. hif_makeimlist				beam p.a.	-88.7deg							
37. hif_makeimages				final theoretical sensitivity	0.0076 Jy/beam							