Reviewing the WebLog

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The WebLog used in this demonstration is available from

http://almanas.jb.man.ac.uk/alma/Web/Meetings/2021/VirtualW orkshop/weblog-example.tgz

However, participants are welcome to bring WebLogs from their own projects.

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.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	
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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	
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accessibility.typeaheadfind.startlinksonly	default	boolean	false	
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accessibility.warn_on_browsewithcaret	default	boolean	true	
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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.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		
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When ALMA archival data are downloaded and unpacked, the files will be sorted into a directory structure similar to this:

[Project ID] science_goal.uid___A001_X#####X## member.uid / A001 X#### X## calibration log product qa raw script

The qa directory for pipeline-processed data contains files with the following suffixes:

*.weblog.tgz
*.qa0_report.pdf
*.qa2_report.html
*.qa2_report.pdf

(The quality assurance data from manually-calibrated data will be in a series of PNG files and a PDF. These are not discussed in this presentation.) 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

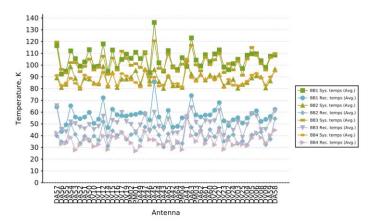
QA3 Re-assessment of data after they are delivered to users triggered when someone discovers a previously-unidentified problem

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	J05384405, J07301141, Z_CMa				
# Antennas	43 (111.6 % for Cycle 6)				
Array	12 [m]				
Baselines	15m 360m				
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	PM antennas a bit higher than the other			
	Times on sources				
OBSERVE_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			

Source: J07301141



Atmosphere calibrat

The QA2 html and PDF files include 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, hif_applycal, therefore it was manually flagged. The pipeline issued lots of flagging in stage 12, hifa_bandpassflag, 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. The bandpass scan shows high scatter in amplitude versus time plots in stage 17, hif_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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Session: session_1						
uidA002_Xd98580_X354.ms uidA002_Xd98580_X354_target.ms	Overview of 'uid_	A002_Xd98580_X	354.ms'			
	Observation Execution Time			Regional - Research and a 199, 2010,		
	Start Time 2019-03-14 01:01:10)		2	
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	Total Time on Source	0:16:06		ta	•	
	Total Time on Science Target	0:05:03		Intent vs Time	Stringer.	Time Time
				Track scan intent vs time	Field vs Tin	ne
	LISTOBS OUTPUT				Track observe	d field vs time
	Spotial Satur			Spectral Setup		
	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		
			131			

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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	Start Time End Time Total Time on Source Total Time on Science Target	ABREALTING REAL AREAL AREAL AREAL AREAL AREAL	Barronda	Field vs Time Track observed field vs time
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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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			I
	Antennas Baselines		1
	Antenna Positions		UV coverage
	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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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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37	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	100.00	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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41	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	6.25	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	6.25			
43	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	100.00	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	1		
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27	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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31	6.25	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	100.00	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	6.25	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.17			
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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25	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		
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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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
9 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
9 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
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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2. hifa_flagdata		1. Import Data											BACK
3. hifa_fluxcalflag													
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					
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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	9											1 0(1)1	
15. hifa_gfluxscale	- 1				Flux Density							Age Of Nearest Monitor Point (days)	
16. hifa_timegaincal	- I	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	- I			27	1.512 Jy								
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23. hif_checkproductsize	- I			35	1.521 Jy								
24. hifa_exportdata	Ĩ.			37	1.520 Jy								
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27. 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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2. hifa_flagdata	- 1	1. Import Data											BACK
3. hifa_fluxcalflag	- 1												
4. hif_rawflagchans	- 1	Data from 1 measurement set was registered with	the pipeline. The imported data is sun	nmarised below.									
5. hif_refant	- 1						Number Impor	tod					
6. h_tsyscal													
7. hifa_tsysflag	9	Measurement Set	SchedBlock ID		Src Type	Dst Type	Scans	Fields	Flux Densities		Size	flux.csv	
8. hifa_antpos 9. hifa_wvrgcalflag	9	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	Ĭ.												
12. hifa_bandpassflag		Imported Flux Densities											
13. hifa_spwphaseup		The following flux densities were imported into the	pipeline context:										
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	
18. hif_makeimlist	- 1			27	1.512 Jy								
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21. hif_makeimages	- 1			31	1.508 Jy								
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23. hif_checkproductsize	- 1			35	1.521 Jy								
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25. hif_mstransform				39	1.517 Jy								
26. hifa_flagtargets 27. hif_makeimlist													
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28. hif_uvcontfit				43	1.470 Jy								
30. hif_uvcontsub				45	1.466 Jy								
Sol mini aveonitado													

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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3. hifa_fluxcalflag													
4. hif_rawflagchans		Flagging agents											
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9. hifa_wvrgcalflag		Flagging agent status per measurement se	t.										
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15. hifa_gfluxscale		Measurement Set	File				Nu	mber of Statements	File			Number	of Statements
16. hifa_timegaincal		uidA002_Xd98580_X354.ms	uid	A002_Xd98580_X354.flago	nline.txt		333	32	uidA002_	(d98580_X354.flagtemplate.txt		1	
17. hif_applycal		Files used for template flagging steps.											
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21. hif_makeimages				Flagging Agent									Measurement Set
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23. hif_checkproductsize													
24. hifa_exportdata													002
25. hif_mstransform													A002,Xd98580_X354
26. hifa_flagtargets													180_X
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		Files used for template flagging steps.											
2. hifa_flagdata													
3. hifa_fluxcalflag		Flagged data sum	narv										
4. hif_rawflagchans			, ,										
5. hif_refant	- 1			Flagging Agent									Measurement Set
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0. hif_lowgainflag	9												x_08i
11. hif_setmodels	9												X354.r
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		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

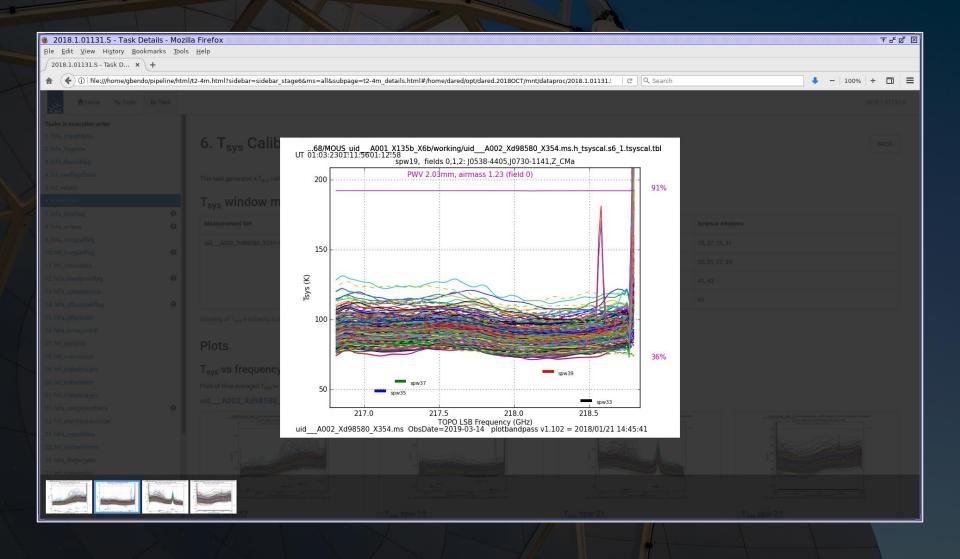
hifa_rawflagchans: More flagging is done here. Again, the total percentages should be <~20%.

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1. hifa_importdata	1 Flag raw chappels					DARK	1
2. hifa_flagdata	4. Flag raw channels					BACK	- 1
3. hifa_fluxcalflag							1
4. hif_rawflagchans	Flags						1
5. hif_refant							1
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
9. hifa_wvrgcalflag 10. hif_lowgainflag	Report Files						1
11. hif_setmodels	Elegand data summary						- 1
12. hifa_bandpassflag	Flagged data summary						1
13. hifa_spwphaseup						Measurement Set	- 1
14. hifa_gfluxscaleflag						E.	- 1
15. hifa_gfluxscale						d L	- 1
16. hifa_timegaincal						1002	1
17. hif_applycal						246PX	1
18. hif_makeimlist						5800	1
19. hif_makeimages						X354	- 1
20. hif_makeimlist	Data Selection		Before Task	Flagged by Task	Total	ms	- 1
21. hif_makeimages	All Data		19.1%	0.0%	19.1%	19.1%	
22. hifa_imageprecheck 9							
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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1. hifa_importdata	6 T Calibration			
2. hifa_flagdata	6. T _{sys} Calibration			BACK
3. hifa_fluxcalflag				
4. hif_rawflagchans	This task generates a T _{sys} calibration table, mapping each science s	spectral window to the T_{avs} window that overlaps in frequency.		
5. hif_refant				
6. h_tsyscal	T _{sys} window mapping			
7. hifa_tsysflag	Measurement Set		T _{sys} window	Science windows
8. hifa_antpos 🛛 😧	Measurement Set		i sys window	
9. hifa_wvrgcalflag	uidA002_Xd98580_X354.ms		17	25, 27, 29, 31
10. hif_lowgainflag			19	33, 35, 37, 39
11. hif_setmodels				
12. hifa_bandpassflag			21	41, 43
13. hifa_spwphaseup 14. hifa_qfluxscaleflag			23	45
14. hifa_gfluxscaleflag				
16. hifa_timegaincal	Mapping of T _{sys} window to science window			
17. hif_applycal	Blata			
18. hif_makeimlist	Plots			
19. hif_makeimages	T _{sys} vs frequency			
20. hif_makeimlist				
21. hif_makeimages	Plots of time-averaged T _{sys} vs frequency, colored by antenna.			
22. hifa_imageprecheck 9	uidA002_Xd98580_X354.ms			
23. hif_checkproductsize	VF 8011573.0.4 (MT 12)1574.0 (97 6144034, with AND 12130, X05494849, AND 2, X05598, X054945, X054945, X154946, X154946, X154946, X154946, X154946, X154946, X154946, X154946, X15494, X15494	VERSIAN DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DE LA DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DESCRIPTION DE LA DESCRIPTION DESCRIPTION DESCRIPTION DE LA DESCRIP	M UT 100000000000000000000000000000000000
24. hifa_exportdata	20	975	20 CA	6 10 IN IN IN IN
25. hif_mstransform		30		110 ·
26. hifa_flagtargets	Bana Bana Bana Bana Bana Bana Bana Bana		The second se	and a
27. hif_makeimlist	20 July 20 Jul			5 B
28. hif_findcont	5	5	50	80
29. hif_uvcontfit	2163 2163 2163 2163 2163 2163 2163 2163	211.6 211.5 211.5 212.5 213.5 214.5	281.0 281.5 281.6 281.5 281.6 281.5 281.6 281.5	2015 2016 2015 2015 2015 2016 2015 TEO 100 Participant 2015 2016 Participant 2015 2016 2016 2016 2016 2016 2016 2016 2016
30. hif_uvcontsub	T _{sys} spw 17	T _{sys} spw 19	T _{sys} spw 21	T _{sys} spw 23

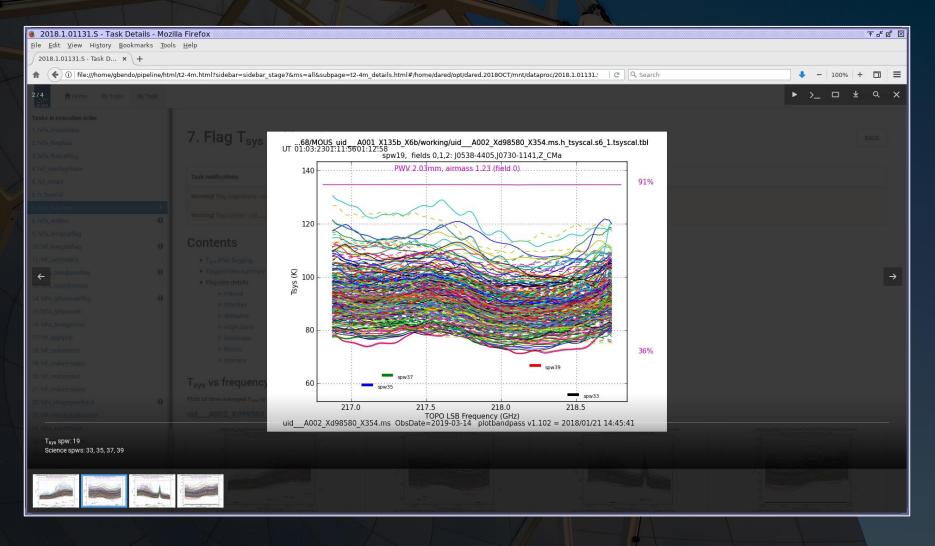
The plots should be devoid of spectral features except in the locations of atmospheric lines, and the amplitudes of all lines in the plots should be similar.



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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1. hifa_importdata	7. Flag T _{sys} calibration	1			
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				
16. hifa_timegaincal	◊ edgechans				
17. hif_applycal					
18. hif_makeimlist	 birdies toomany 				
19. hif_makeimages	• iomany				
20. hif_makeimlist	T _{svs} vs frequency after flagging				
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25. hif_mstransform					
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 wrigical task have selected antennas whose WVR correction needs flagging. The correction applied to those antennas.
4.hif_rawllegchans	rest of the calibration process. Click J0730-1141, J0538-4405 (PHASE, AMPLITUDE, BANDPASS)
	SPW 45 Correlations X and Y All Antennas Scans 3,6 and 9
6 h_tsyscal	
7, hifa_tsysflag 🛛 😶 8. hifa_antpos	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_bandpaasilag 0	
13. htfa_spwphaseup	
14. hifa_gfluxocaleflag O	uidA002_Xd96580_X35 Spectral window 45 Spectral window 45
15. hifa_gilusscale	
16. hifa_timegaincal	
17. hif_applycal	
18. hrf_makeimlist	
19. hif_makeimages	
20. htf_makeimlist	
21. hif_makernages	Phase correction vs
	Plots show the phase offset (lower)
	Scan
	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://agragets 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 trace of the two destations as		
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 10		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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Home By Topic By Task	*					2018.1.01131.S
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	1	×	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	1											
1. hifa_importdata		44.0.1.1.0										
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 t	he measurement set model column and recorded in the p	pipeline context	Only the spectral in	dex of the bandpass o	calibrator is set	here and its flu	x density will b	e set later.		
	9						Flux Density					
	9							-				
9. hifa_wvrgcalflag	. I	Measurement Set	Field	SpW	Centre Freq	Band	1	Q	U	v	Spix	flux.csv
	9	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 13. hifa_spwphaseup	9			27	LINGOTORIE							
				29	219.953 GHz		1.510 Jy					
15. hifa_gfluxscale	Ľ			31	220.402 GHz		1.508 Jy					
16. hifa_timegaincal					040 470 011							
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	9			41	230.542 GHz		1.472 Jy					
23. hif_checkproductsize				43	231.224 GHz		1.470 Jy					
24. hifa_exportdata				40	201.224 0112		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		- Plots of model amplitude vs UV distance	for each Measurement Set. One plot is generated per ba	aseband, with da	ata shown for all ant	ennas and correlation	s. colored by sr	W.				

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		43	231.224 GHZ 1.470 Jy									
1. hifa_importdata		45	232.504 GHz 1.466 Jy									
2. hifa_flagdata	Setjy Results											
3. hifa_fluxcalflag	only neuro											
4. hif_rawflagchans	Model amplitude vs UV dis	tance										
5. hif_refant		Model amplitude vs UV distance Plots of model amplitude vs UV distance for each Measurement Set. One plot is generated per baseband, with data shown for all antennas and correlations, colored by spw.										
6. h_tsyscal	· · · ·	measurement Set. One plot is generated per baseband, with da	ta snown for all antennas and correlations, colored by s	spw.								
7. hifa_tsysflag												
8. hifa_antpos 0	Amp:model vs. UVdist	Amp:model vs. UVdist		nodel vs. UVdist	Amp:model vs. UVdist							
9. hifa_wvrgcalflag	1.5340	1,580-	1.4790 -	20								
10. hif_lowgainflag 9	1.5330 8 1.5320	1.5390-	1.4735 -	1.6 B								
11. hif_setmodels		1.3380	E 1.0720	Website States								
12. hifa_bandpassflag 9	3.5300	1.5379-	1.4705	10-								
13. hifa_spwphaseup	1500	13300-	1400									
14. hifa_gfluxscaleflag 9	0 50 50 150 200 150 200 350 350	6 50 200 200 200 000 000 000	100 e00 50 100 130	200 m 20 30 350 400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	200 250 200 250 300 350 400							
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 baseb	and 2 for Model amplitude vs UV dista	ance in baseband 3 for Model amplitude vs	UV distance in baseband 4 for							
18. hif_makeimlist 19. hif_makeimages	AMPLITUDE calibrator.	AMPLITUDE calibrator.	AMPLITUDE calibrator.	AMPLITUDE calibra	itor.							
20. hif_makeimlist												
21. hif_makeimages												
22. hifa_imageprecheck 9	Pipeline QA											
23. hif_checkproductsize	Input Parameters											
24. hifa_exportdata												
25. hif_mstransform	Tasks Execution Statistics											
26. hifa_flagtargets												
27. hif_makeimlist	CASA logs for stage 11											
28. hif_findcont	 View or download stage11/casapy.log (30.3 KB)										
29. hif_uvcontfit		,										
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.

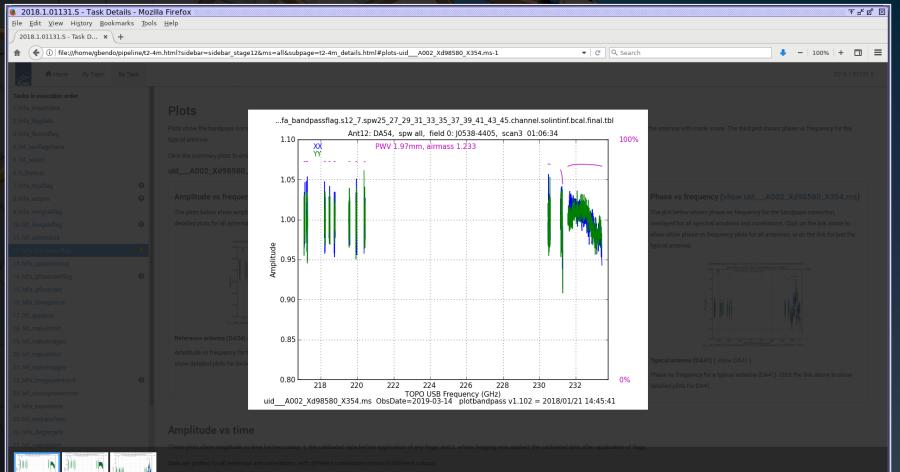
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Tasks in execution order												
1. hifa_importdata												
2. hifa_flagdata		12. Bandpass Calibration and F	lagging	BACK								
3. hifa_fluxcalflag												
4. hif_rawflagchans												
5. hif_refant		Task notifications	sk notifications									
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	k performs a preliminary bandpass solution and applies it, then computes the flagging heuristics by calling hif_corrected ampflag which looks for outlier visibility points by statistically examining the scalar difference of the corrected amplitude minus model									
9. hifa_wvrgcalflag		amplitudes, flags those outliers, then derives a final bandpass solution (if any fla	, flags those outliers, then derives a final bandpass solution (if any flags 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	tail, 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		flagged, a final bandpass solution is solved (if necessary) and the name "final" is	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 flagging 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		mouse energiet										
25. hif_mstransform		uidA002_Xd98580_X354.ms uidA002_Xd98580_X354.ms-flag_commands.txt 46										
26. hifa_flagtargets		Report Files										
27. hif_makeimlist		neput riteo										
28. hif_findcont		Flagged data summary										
29. hif_uvcontfit												
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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A Home By Topic By Tas		2018.1.01131.S								
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 correlations 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							
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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 calibrated data before application of any flags; and 2, where flagging was applied, the calibrated data after application of flags.										
3. hifa_fluxcalflag	Data are plotted for all antennas and correlations, with different correlations shown in different colours.										
4. hif_rawflagchans											
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)	UVolist (no)	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 50 200 250 200 250 300 400 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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Tasks in execution order												
1. hifa_importdata	- 1	14. Phased-up Fluxscale Calibr	otio	n and Elagging			ACK					
2. hifa_flagdata	- 1	14. Flidseu-up Fluxscale Galibi	auo	n and Flagging		BA	ACK					
3. hifa_fluxcalflag	- 1											
4. hif_rawflagchans	- 1	Task notifications	Task notifications									
5. hif_refant	- 1	Task Inulications	ash 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			tiliers. The philosophy is that only outlier data points that have remained outliers after calibration will be flagged. The heuristic works equally well on resolved calibrators and point sources because it is not performing a vector difference, and thus is not sensitive 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 calibrated data before application of any flags; and 2, where flagging was applied, the calibrated data after application of flags.										
3. hifa_fluxcalflag		Data are plotted for all antennas and correlations, with different correlations 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		14										
7. hifa_tsysflag	9	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 se							
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							
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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 correlations shown in different colours.										
3. hifa_fluxcalflag											
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											
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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	5. Phased-up fluxscale									
3. hifa_fluxcalflag	- 1											
4. hif_rawflagchans	- 1	Contents										
5. hif_refant	- 1	Tables:										
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	- 1
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) FHASE	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			29 219.953 GHz 58.5		842.600 mJy	0.000 Jy	0.000 Jy	0.000 Jy			
14. hifa_gfluxscaleflag	9				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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1. Marganetian Derived flux density 'vs catalyty end used with the end used in the second of the	Home By Topic By Task				2018.1.01131.S
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A MA Anarabi MA A	1. hifa_importdata		•		
 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.
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3. hifa_fluxcalflag												
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5. hif_refant		Plots										
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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		
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22. hifa_imageprecheck	9	uidA002_Xd98580_X354.ms	Amplitude	Infinite	CHECK, TARGET	25, 27, 29, 31, 33, 35, 37, 39, 41, 43,	uidA002_Xd98580_X354.ms.hifa_timegaincal.s16_6.spw25_27_29_31_33_35	5_37_39_41_43_45.solin	tinf.gacal.tbl	1		
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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 (() errer (0 · · · · · · · · · · · · · · · · · · ·) www.
11. hif_setmodels			500	g -30- -100-	9 -00-
12. hifa_bandpassflag	0	-150	-339	-350	-350
13. hifa_spwphaseup	•	010400° 010600° 010600° 032000° 032000° 032600° 032500° 032600° 032000° Time (fram 2018/03/14) (Munemica)	2 01.6600 01.0600 01.0600 01.1000 01.1400 01.9600 01.9600 01.9600 01.000 Time (from 2019/03/14) (from moss)	1 12.0400 12.0400 12.0400 12.2500 0.25400 0.25400 0.25400 0.25800 0.25400 Time (from 2015/03/14) (frommess)	01.04.00 01.
14. hifa_gfluxscaleflag	9	Spectral window 25	Spectral window 27	Spectral window 29	Spectral window 31
15. hifa_gfluxscale 16. hifa_timegaincal		Phase vs time for spectral window 25 , all antennas and	 Phase vs time for spectral window 27, all antennas and 	Phase vs time for spectral window 29 , all antennas and	Phase vs time for spectral window 31 , all antennas and
10. hif_applycal		correlations.	correlations.	correlations.	correlations.
18. hif_makeimlist					
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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 am
9. hifa_wvrgcalflag		04			
10. hif_lowgainflag	9	as the second se	a Guide in the second s	aa 197	
11. hif_setmodels 12. hifa_bandpassflag			and the second se		
13. hifa_spwphaseup	×	- Company	C C	- Energy Contract of Contract	2
14. hifa_gfluxscaleflag					Trinera bilance bilance bila bilance
15. hifa_gfluxscale	Ľ	4 X • Y	A X • Y	4 X • Y	а.Х. в . Т
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 Source E and 9	SPW 37 Constations X and Y All Antennas Science 6 and 9	SPR 31 Comparison X and Y all Arbornas Scans 4 and 9
21. hif_makeimages	- 1			16	10 *
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24. hifa_exportdata			P P	(formation)	
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26. hifa_flagtargets		Distance to Automa Bridd (a)	Costance to Reference Briddy (m)	Distance to Induced additional disk (m)	Distance to Reference address address (p)
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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2. hifa_flagdata	Plots show the amplitude calibration to be applied to the target sour	ots show the amplitude calibration to be applied to the target source. A plot is shown for each spectral window, with amplitude correction 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	ck the summary plots to enlarge them, or the spectral window heading to see detailed plots per spectral window and antenna.									
4. hif_rawflagchans	uidA002_Xd98580_X354.ms										
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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 2013/001/14 (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%							
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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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1. hifa_importdata		17 Annhuad	:		hlas								
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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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1. hifa_importdata	Plots	ots								
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						
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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 - 6 						
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	Plots of calibrated phase vs frequency for all antennas and correlations, coloured by antenna.										
3. hifa_fluxcalflag	uidA002_Xd98580_X354.ms	uidA002_Xd98580_X354.ms										
4. hif_rawflagchans	Phase:corrected vs. Frequency Spw: 25	Phase:corrected vs. Frequency Spu: 25 Phase:corrected vs. Frequency Spu: 27 Phase:corrected vs. Frequency Spu: 29 Phase:corrected vs. Frequency Spu: 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	215.500 215.540 225.550 2255.500 2155.510 225.540 215.500 215.500 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 s		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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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	f the ratio of the corrected amplitude to the model column value versus antenna ID. Data are coloured by antenna and are shown 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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1. hifa_importdata		10 Toloon/M	akalmagas				
2. hifa_flagdata		19. Tclean/Ma	-				
3. hifa_fluxcalflag		Make calibrator image	es				BACK
4. hif_rawflagchans							
5. hif_refant		Image Details					
6. h_tsyscal		inage Details					
7. hifa_tsysflag	θ	Field	Spw	Pol	Image details		Image result
8. hifa_antpos 9. hifa_wvrgcalflag	0	J0538-4405 (BANDPASS)	25 / X1494769907#ALMA_RB_06#BB_1#SW-01	I	centre frequency of image	218.7861GHz (LSRK)	Type maps displayment feet(2010) 4403 spec 23 for 1
10. hif_lowgainflag	θ				beam	1.51 x 0.956 arcsec	
11. hif_setmodels							
12. hifa_bandpassflag	0				beam p.a.	89.6deg	
13. hifa_spwphaseup					final theoretical sensitivity	0.00042 Jy/beam	
14. hifa_gfluxscaleflag	0				cleaning threshold	0.0027 Jy/beam	Construction Construction
15. hifa_gfluxscale						Dirty DR: 3.6e+03	View other QA images
16. hifa_timegaincal						DR correction: 3.2	
17. hif_applycal					clean residual peak / scaled MAD	4.58	
18. hif_makeimlist 19. hif_makeimages					non-pbcor image RMS	0.00057 Jy/beam	
20. hif_makeimlist					pbcor image max / min	1.51 / -0.00505 Jy/beam	
21. hif_makeimages					fractional bandwidth / nterms	0.027% / 1	
22. hifa_imageprecheck	θ				aggregate bandwidth	0.0586 GHz (LSRK)	
23. hif_checkproductsize					aggregate bandwidth	0.0566 GHZ (LSRK)	_
24. hifa_exportdata 25. hif_mstransform		1			score	1.00	
25. hif_mstransform 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	1	centre frequency of image	219.5866GHz (LSRK)	Septimage dipleyment folio(05)8-4455 spec27 tor3
28. hif_findcont							
29. hif_uvcontfit					beam	1.51 x 0.952 arcsec	
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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1. hifa_importdata		00 1										1 I
2. hifa_flagdata		22. In	nage Pr			BACK						
3. hifa_fluxcalflag												
4. hif_rawflagchans												
5. hif_refant		Task notifica	tions									- 1
6. h_tsyscal		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 rec	uested beam ar	eas.		
7. hifa_tsysflag	0			·····, ····,		····						
8. hifa_antpos	0	Goals From	n OT:									- 1
9. hifa_wvrgcalflag		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	Ĭ.	Estimated	Synthesized B	eam and Sensitivities for the Represen	ntative Target/Frequency							- 1
16. hifa_timegaincal		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 val	lue closest to the	edefault (+0.	.5) that	- 1
17. hif_applycal		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 low	vest "%Diff from	mean AR" va	alue for the	·
18. hif makeimlist		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	/lin / Max Accept	able Resolut	tion" is not	
19. hif_makeimages				0.5 is used. The chosen robust value is highlighted i								- 1
20. hif_makeimlist				width (aggBW) is also given assuming NO line con								
21. hif_makeimages				otherwise the beam is predicted for the repSPW al messages appear on this page.	one. A message appears on the By Task View	w ir a non-derault value or robust (i.e., not +0.5)) is chosen. Additionally, if t	the predicted beam is not i	within the P1 req	Jested range	e using one	- 1
22. hifa_imageprecheck	0		, 5	5 11 15								- 1
23. hif_checkproductsize	Ť	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	osequent science target fla	agging; (2) loss o	f continuum	n 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	image complexity; (b) dyna	amic range effec	ts; (c) calibr:	ation	- 1
25. hif_mstransform		deficiencies (p	oor phase transfer,	residual baseline based effects, residual antenna j	position errors, etc.).							- 1
26. hifa_flagtargets		robust	uvtaper	Synthesized Beam	%Diff from mean AR	cell	bandwidth	bwmode E	ffective Sensiti	vity		
27. hif_makeimlist		-0.5	Π	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/bear			
28. hif_findcont	- H.	-0.0	Ш	1.15 X 0.761 alcsec @ -90.0 deg	-19.3 %	0.10 x 0.10 arcsec	2070 MHZ	iehow 2	.92e-05 Jy/bear			-
28. hif_uvcontfit		-0.5	0	1.15 x 0.761 arcsec @ -90.0 deg	-19.3%	0.15 x 0.15 arcsec	2578 MHz	aggBW 9	9.92e-05 Jy/bear	л		
29. hit_uvcontrub		0.0	Π	1 20 x 0 800 arcsec @ -88 7 deg	-11.5%	0.16 x 0.16 arcsec	2578 MHz	renBW 7	7 03e-05 Jv/bear	20		

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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1. hifa_importdata		These estimate	ee ehould alwave h	considered as the REST 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 continu	ım bandwidt	h
2. hifa_flagdata	These estimates should always be considered as the BEST CASE SCENARIO. These estimates account for Tsys, the observed uv-coverage, and prior flagging. The estimates DO NOT account for (1) subsequent science target flagging; (2) loss of continuum bandwidth a due to the hif_findcont process (i.e. removal of lines and other spectral features from the data used to image the continuum); (3) Issues that affect the image quality like (a) poor match of uv-coverage to image complexity; (b) dynamic range effects; (c) calibration										
3. hifa_fluxcalflag	1.	deficiencies (poor 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 WINZ	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
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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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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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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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