Reviewing the WebLog and Other QA Documents

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The qa directory contains the following files, which provide very useful information on the quality of the data:

```
member.uid___A001_X158f_X7a1.hifa_calimage_renorm.weblog.tgz
member.uid___A001_X158f_X7a1.qa2_report.pdf
uid___A002_Xf396d6_X45bb.qa0_report.pdf
```

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

Data from older cycles will have been manually-calibrated. The quality assurance data from these cycles will be in a series of PNG files and a PDF.

QA stands for quality assurance. ALMA has four phases of quality assurance:

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

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

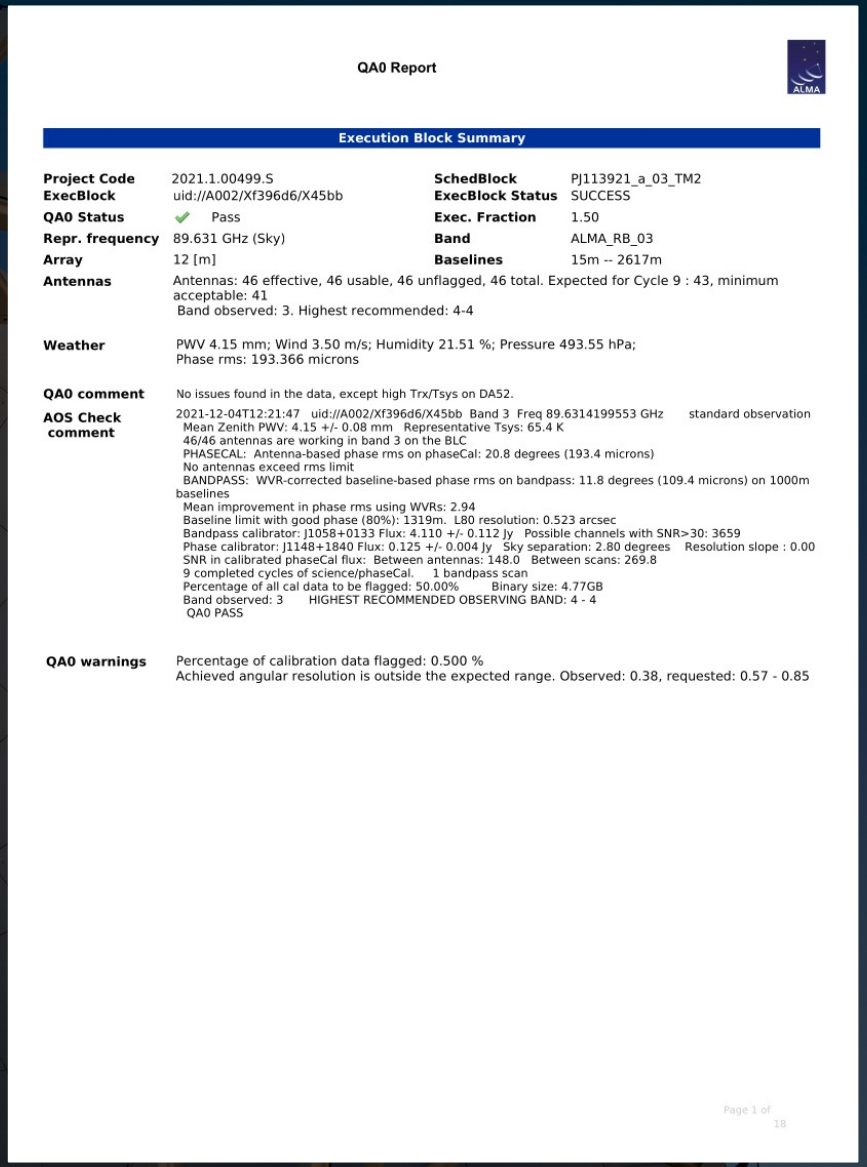
QA2 A complete quality assessment performed on the data after completely calibrating and imaging the data

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

The QA0 PDF provides a summary of comments from the astronomer who acquired the data. Each Execution Block (EB) will have its own report.

Versions of this document from earlier cycles contain just some simple diagnostic plots.

Versions from recent cycles contain several new sets of diagnostic plots as well as preview images.



QA0 Report

ALMA

Execution Block Summary

Project Code	2021.1.00499.S	**SchedBlock**	PJ113921_a_03_TM2
ExecBlock	uid://A002/Xf396d6/X45bb	**ExecBlock Status**	SUCCESS
QA0 Status	✔ Pass	**Exec. Fraction**	1.50
Repr. frequency	89.631 GHz (Sky)	**Band**	ALMA_RB_03
Array	12 [m]	**Baselines**	15m -- 2617m

Antennas Antennas: 46 effective, 46 usable, 46 unflagged, 46 total. Expected for Cycle 9 : 43, minimum acceptable: 41
Band observed: 3. Highest recommended: 4-4

Weather PWV 4.15 mm; Wind 3.50 m/s; Humidity 21.51 %; Pressure 493.55 hPa;
Phase rms: 193.366 microns

QA0 comment No issues found in the data, except high Trx/Tsys on DA52.

AOS Check comment
2021-12-04T12:21:47 uid://A002/Xf396d6/X45bb Band 3 Freq 89.6314199553 GHz standard observation
Mean Zenith PWV: 4.15 +/- 0.08 mm Representative Tsys: 65.4 K
46/46 antennas are working in band 3 on the BLC
PHASECAL: Antenna-based phase rms on phaseCal: 20.8 degrees (193.4 microns)
No antennas exceed rms limit
BANDPASS: WVR-corrected baseline-based phase rms on bandpass: 11.8 degrees (109.4 microns) on 1000m baselines
Mean improvement in phase rms using WVRs: 2.94
Baseline limit with good phase (80%): 1319m. L80 resolution: 0.523 arcsec
Bandpass calibrator: J1058+0133 Flux: 4.110 +/- 0.112 Jy Possible channels with SNR>30: 3659
Phase calibrator: J1148+1840 Flux: 0.125 +/- 0.004 Jy Sky separation: 2.80 degrees Resolution slope : 0.00
SNR in calibrated phaseCal flux: Between antennas: 148.0 Between scans: 269.8
9 completed cycles of science/phaseCal. 1 bandpass scan
Percentage of all cal data to be flagged: 50.00% Binary size: 4.77GB
Band observed: 3 HIGHEST RECOMMENDED OBSERVING BAND: 4 - 4
QA0 PASS

QA0 warnings Percentage of calibration data flagged: 0.500 %
Achieved angular resolution is outside the expected range. Observed: 0.38, requested: 0.57 - 0.85

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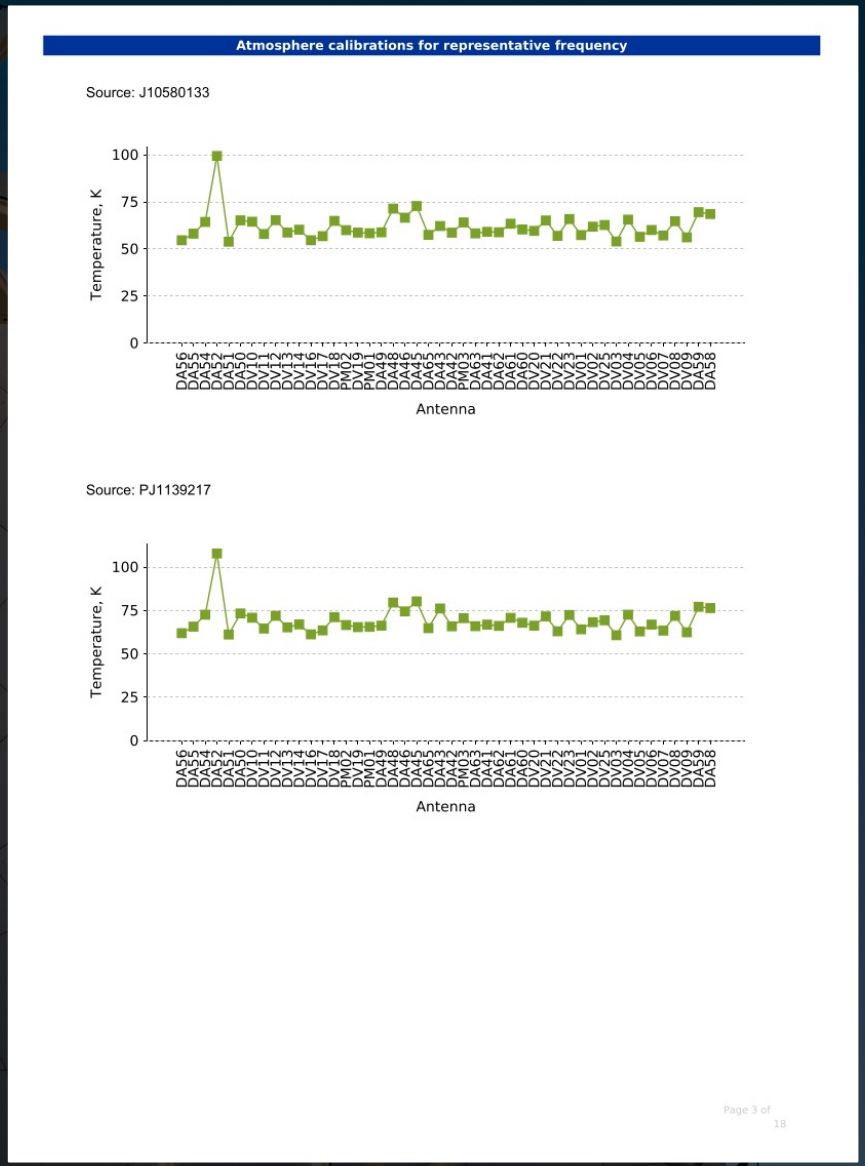
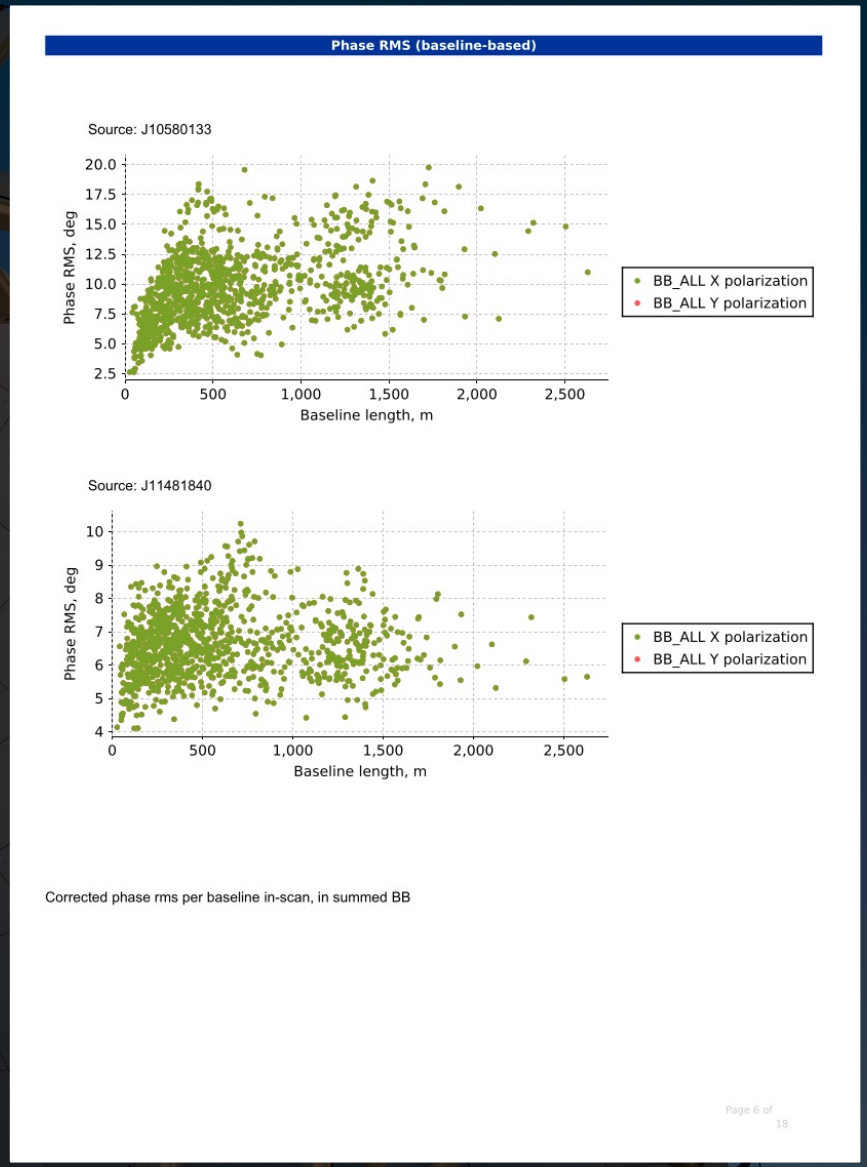
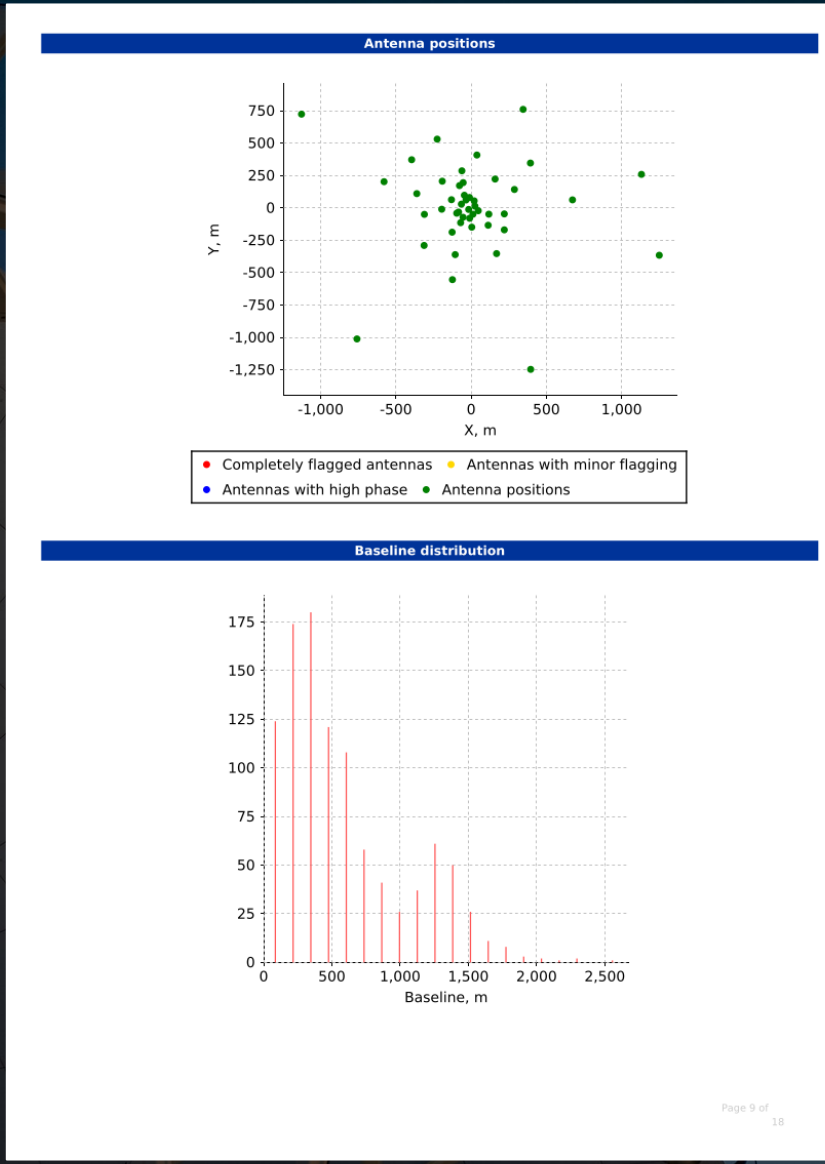
The plots of T_{sys} or system temperature (under "atmospheric calibrations") should be checked for any antennas that are outliers.



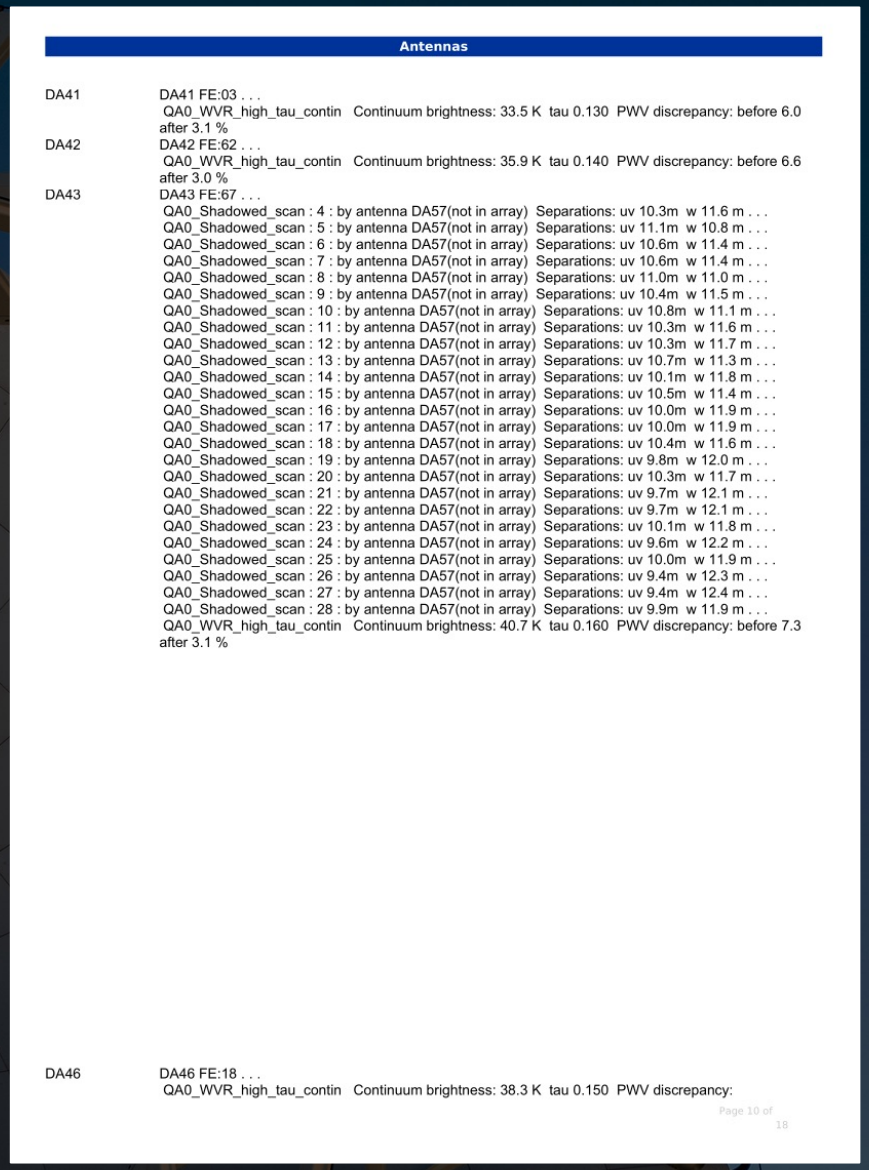
Any outliers in the plots of phase RMS versus baseline length could be indicative of antennas or baselines that were not producing usable data. These data will need to be checked later.



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



The antenna list midway through the QA0 report has useful information on antennas that may be producing problematic or unusable data.



Antennas

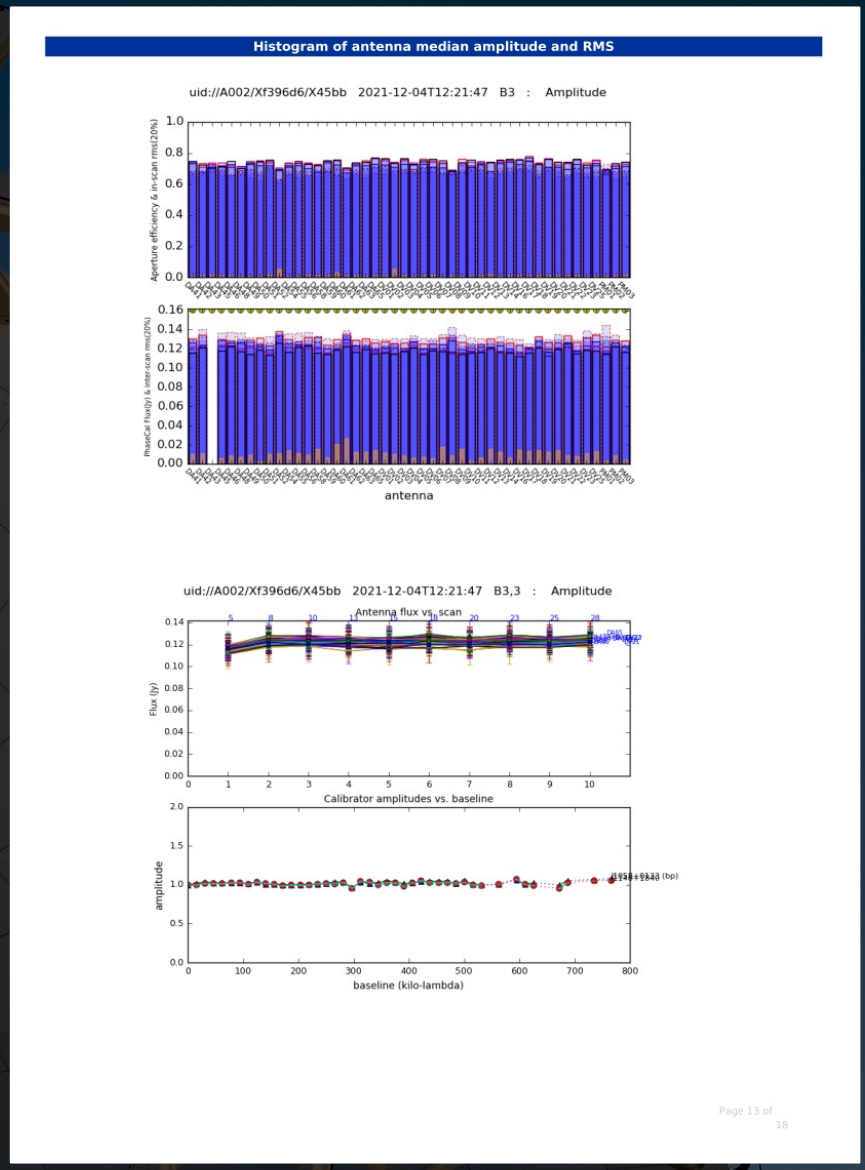
DA41 DA41 FE:03 . . .
QA0_WVR_high_tau_contin Continuum brightness: 33.5 K tau 0.130 PWV discrepancy: before 6.0 after 3.1 %

DA42 DA42 FE:62 . . .
QA0_WVR_high_tau_contin Continuum brightness: 35.9 K tau 0.140 PWV discrepancy: before 6.6 after 3.0 %

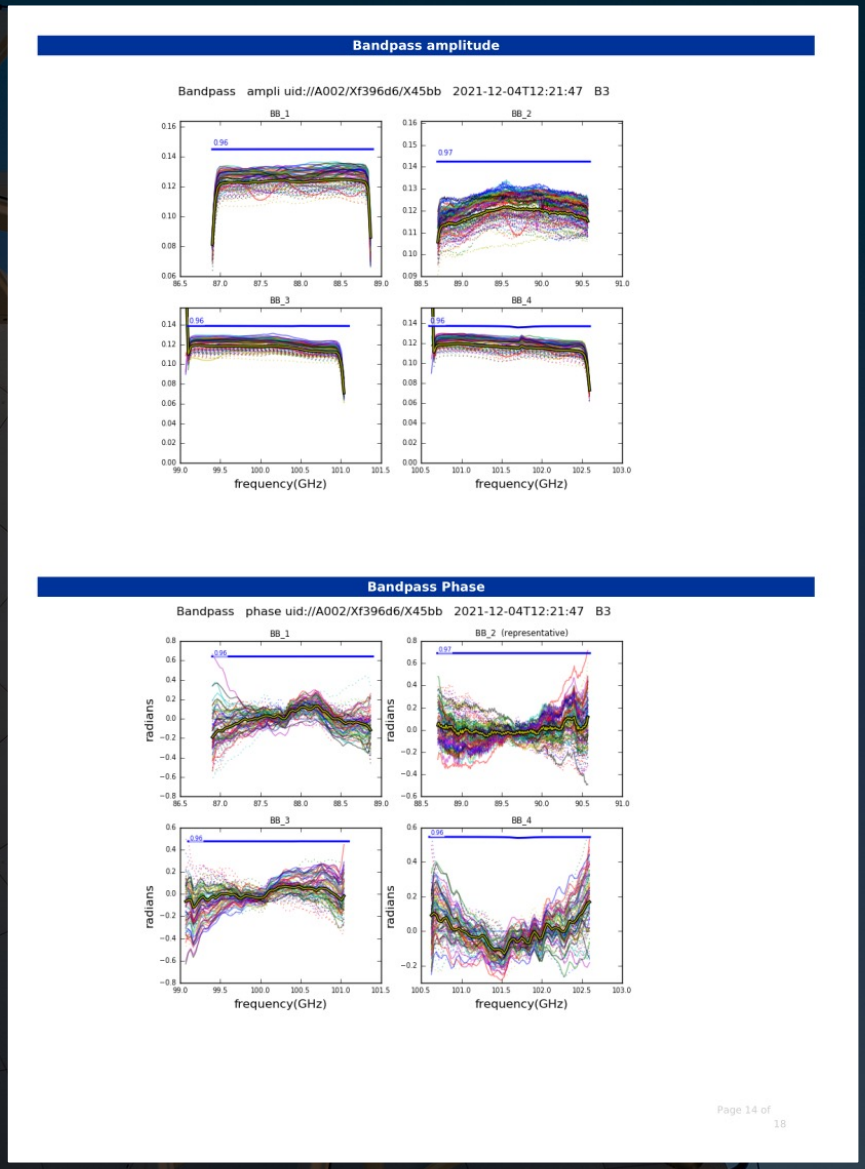
DA43 DA43 FE:67 . . .
QA0_Shadowed_scan : 4 : by antenna DA57(not in array) Separations: uv 10.3m w 11.6 m . . .
QA0_Shadowed_scan : 5 : by antenna DA57(not in array) Separations: uv 11.1m w 10.8 m . . .
QA0_Shadowed_scan : 6 : by antenna DA57(not in array) Separations: uv 10.6m w 11.4 m . . .
QA0_Shadowed_scan : 7 : by antenna DA57(not in array) Separations: uv 10.6m w 11.4 m . . .
QA0_Shadowed_scan : 8 : by antenna DA57(not in array) Separations: uv 11.0m w 11.0 m . . .
QA0_Shadowed_scan : 9 : by antenna DA57(not in array) Separations: uv 10.4m w 11.5 m . . .
QA0_Shadowed_scan : 10 : by antenna DA57(not in array) Separations: uv 10.8m w 11.1 m . . .
QA0_Shadowed_scan : 11 : by antenna DA57(not in array) Separations: uv 10.3m w 11.6 m . . .
QA0_Shadowed_scan : 12 : by antenna DA57(not in array) Separations: uv 10.3m w 11.7 m . . .
QA0_Shadowed_scan : 13 : by antenna DA57(not in array) Separations: uv 10.7m w 11.3 m . . .
QA0_Shadowed_scan : 14 : by antenna DA57(not in array) Separations: uv 10.1m w 11.8 m . . .
QA0_Shadowed_scan : 15 : by antenna DA57(not in array) Separations: uv 10.5m w 11.4 m . . .
QA0_Shadowed_scan : 16 : by antenna DA57(not in array) Separations: uv 10.0m w 11.9 m . . .
QA0_Shadowed_scan : 17 : by antenna DA57(not in array) Separations: uv 10.0m w 11.9 m . . .
QA0_Shadowed_scan : 18 : by antenna DA57(not in array) Separations: uv 10.4m w 11.6 m . . .
QA0_Shadowed_scan : 19 : by antenna DA57(not in array) Separations: uv 9.8m w 12.0 m . . .
QA0_Shadowed_scan : 20 : by antenna DA57(not in array) Separations: uv 10.3m w 11.7 m . . .
QA0_Shadowed_scan : 21 : by antenna DA57(not in array) Separations: uv 9.7m w 12.1 m . . .
QA0_Shadowed_scan : 22 : by antenna DA57(not in array) Separations: uv 9.7m w 12.1 m . . .
QA0_Shadowed_scan : 23 : by antenna DA57(not in array) Separations: uv 10.1m w 11.8 m . . .
QA0_Shadowed_scan : 24 : by antenna DA57(not in array) Separations: uv 9.6m w 12.2 m . . .
QA0_Shadowed_scan : 25 : by antenna DA57(not in array) Separations: uv 10.0m w 11.9 m . . .
QA0_Shadowed_scan : 26 : by antenna DA57(not in array) Separations: uv 9.4m w 12.3 m . . .
QA0_Shadowed_scan : 27 : by antenna DA57(not in array) Separations: uv 9.4m w 12.4 m . . .
QA0_Shadowed_scan : 28 : by antenna DA57(not in array) Separations: uv 9.9m w 11.9 m . . .
QA0_WVR_high_tau_contin Continuum brightness: 40.7 K tau 0.160 PWV discrepancy: before 7.3 after 3.1 %

DA46 DA46 FE:18 . . .
QA0_WVR_high_tau_contin Continuum brightness: 38.3 K tau 0.150 PWV discrepancy:

These plots of the antenna median amplitude and RMS noise can also be used to identify any antennas that could be producing noisy or problematic data.

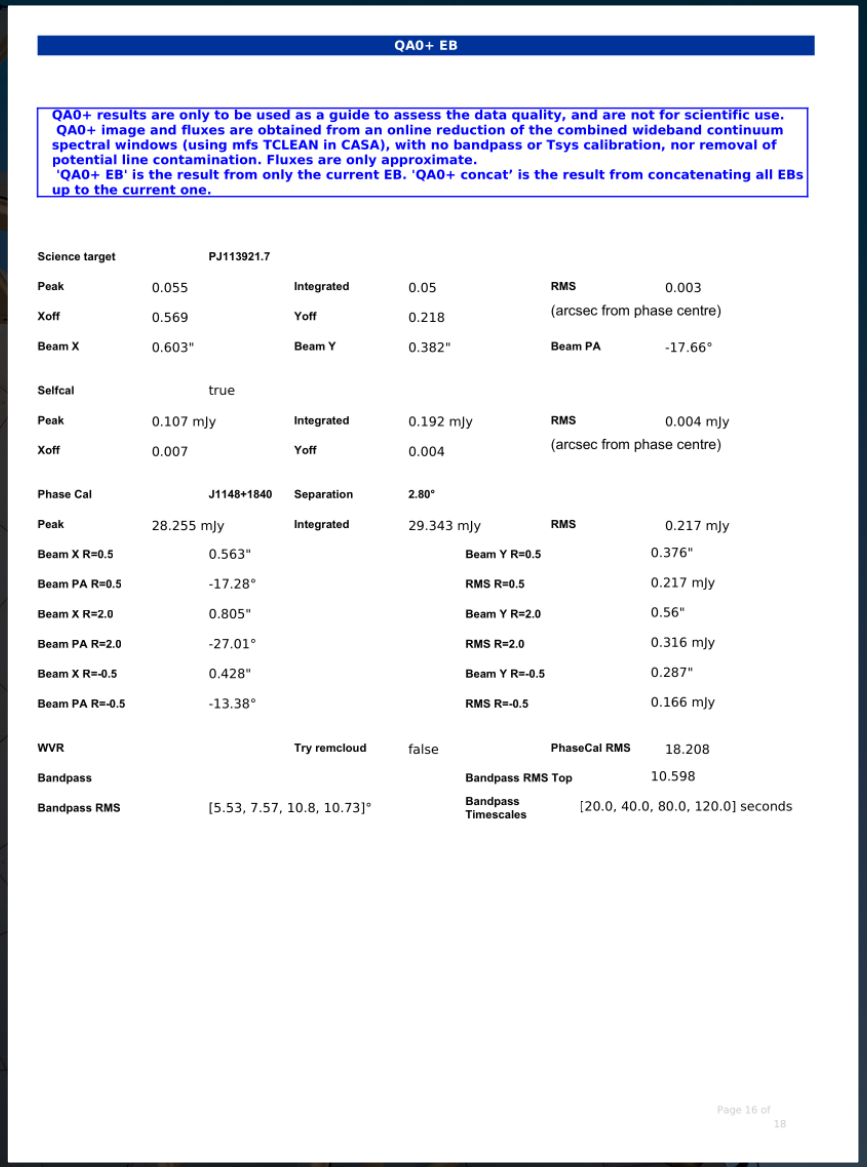


The bandpass amplitude and phase plots can be used to check for any irregularities in the data as a function of frequency.



The QA0+ section shows some very quick (but very rough) images produced from the data soon after the observations were performed as well as some measurements from those images.

While these images and data are useful for providing a preliminary view of the results, they may be inaccurate compared to what is in the WebLogs.



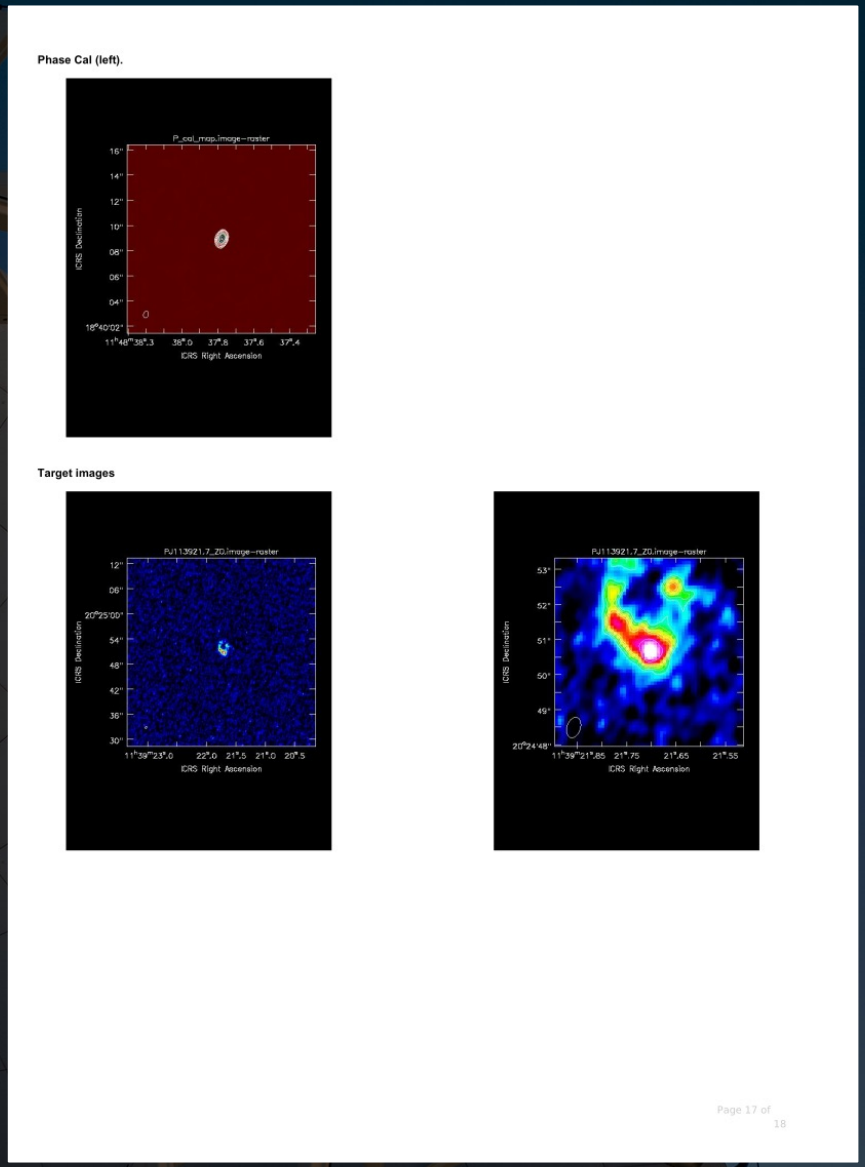
QA0+ EB

QA0+ results are only to be used as a guide to assess the data quality, and are not for scientific use. QA0+ image and fluxes are obtained from an online reduction of the combined wideband continuum spectral windows (using mfs TCLEAN in CASA), with no bandpass or Tsys calibration, nor removal of potential line contamination. Fluxes are only approximate.
'QA0+ EB' is the result from only the current EB. 'QA0+ concat' is the result from concatenating all EBs up to the current one.

Science target	**PJ113921.7**				
Peak	0.055	**Integrated**	0.05	**RMS**	0.003
Xoff	0.569	**Yoff**	0.218	(arcsec from phase centre)	
Beam X	0.603"	**Beam Y**	0.382"	**Beam PA**	-17.66°
Selfcal	true				
Peak	0.107 mJy	**Integrated**	0.192 mJy	**RMS**	0.004 mJy
Xoff	0.007	**Yoff**	0.004	(arcsec from phase centre)	
Phase Cal	**J1148+1840**	**Separation**	**2.80°**		
Peak	28.255 mJy	**Integrated**	29.343 mJy	**RMS**	0.217 mJy
Beam X R=0.5	0.563"			**Beam Y R=0.5**	0.376"
Beam PA R=0.5	-17.28°			**RMS R=0.5**	0.217 mJy
Beam X R=2.0	0.805"			**Beam Y R=2.0**	0.56"
Beam PA R=2.0	-27.01°			**RMS R=2.0**	0.316 mJy
Beam X R=-0.5	0.428"			**Beam Y R=-0.5**	0.287"
Beam PA R=-0.5	-13.38°			**RMS R=-0.5**	0.166 mJy
WVR		**Try remcloud**	false	**PhaseCal RMS**	18.208
Bandpass				**Bandpass RMS Top**	10.598
Bandpass RMS	[5.53, 7.57, 10.8, 10.73]°			**Bandpass Timescales**	[20.0, 40.0, 80.0, 120.0] seconds

The QA0+ section shows some very quick (but very rough) images produced from the data soon after the observations were performed as well as some measurements from those images.

While these images and data are useful for providing a preliminary view of the results, they may be inaccurate compared to what is in the WebLogs.



The QA0+ EB section contains the images created using just one Execution Block (EB).

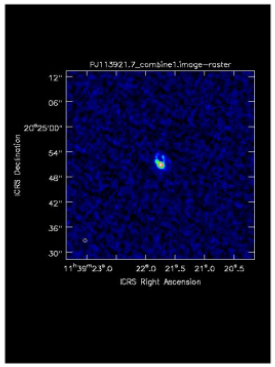
The QA0+ concat section contains images based on combining the data from this EB with previously-executed EBs (if they exist).

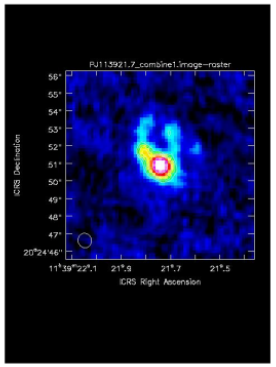
QA0+ concat

N EBs	1	**ExecBlock UIDs**	[]		
Beam X R=0.5	0.829"			**Beam Y R=0.5**	0.76"
Beam PA R=0.5	16.24°			**RMS R=0.5**	0.003 mJy
Beam X R=2.0	1.254"			**Beam Y R=2.0**	1.131"
Beam PA R=2.0	-26.32°			**RMS R=2.0**	0.003 mJy
Beam X R=-0.5	0.593"			**Beam Y R=-0.5**	0.407"
Beam PA R=-0.5	4.93°			**RMS R=-0.5**	0.005 mJy

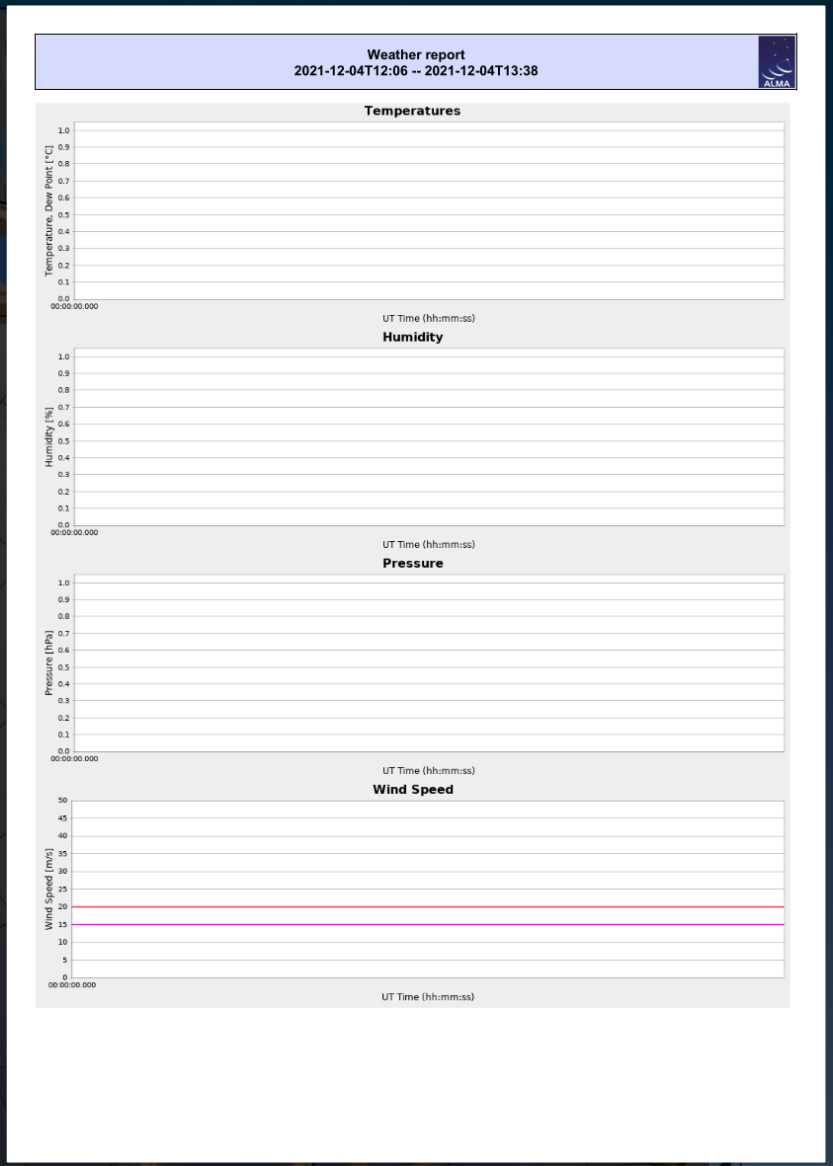
Science target	PJ113921.7	**RA**	11:39:21.745	**Dec**	+020:24:50.9136
Xoff	-0.044	**Yoff**	-0.014	**Offset (fraction of beam)**	0.058
Peak	0.117 mJy	**Integrated**	0.253 mJy	**RMS**	0.003 mJy

Concatenated target images

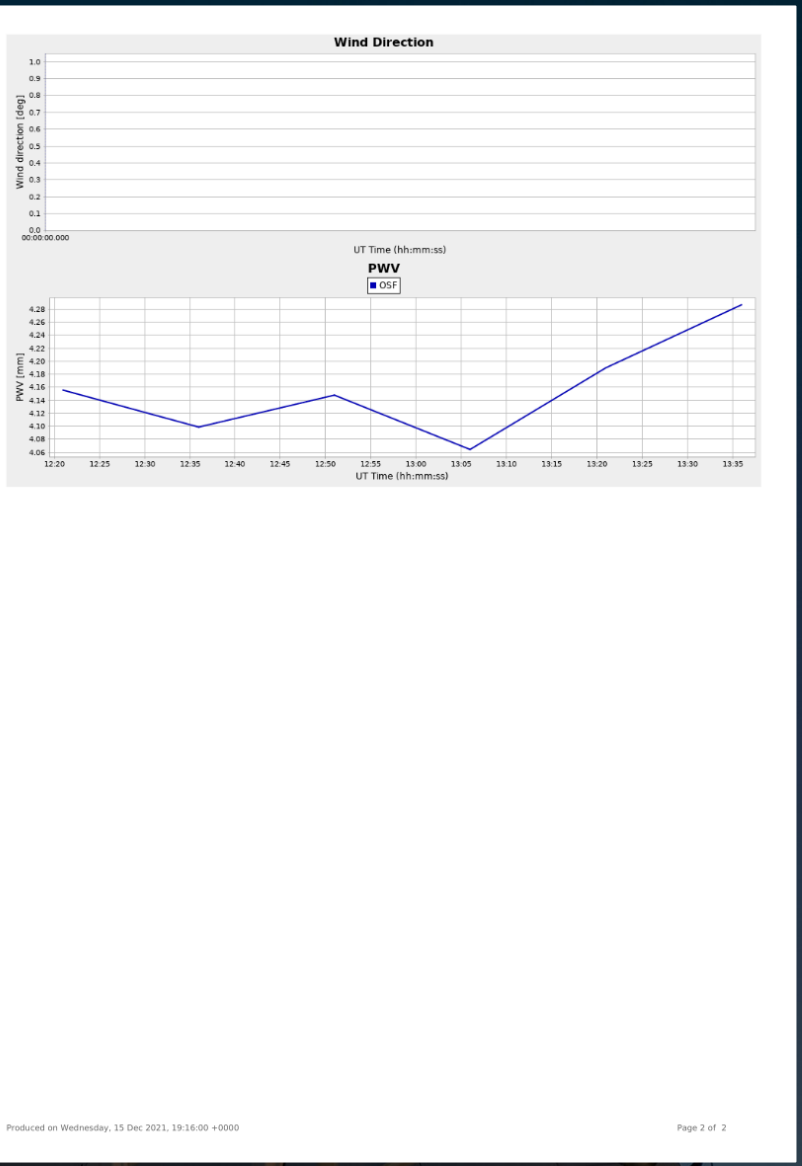




The final two pages show the weather conditions at the site, although this information is also available in the WebLogs.

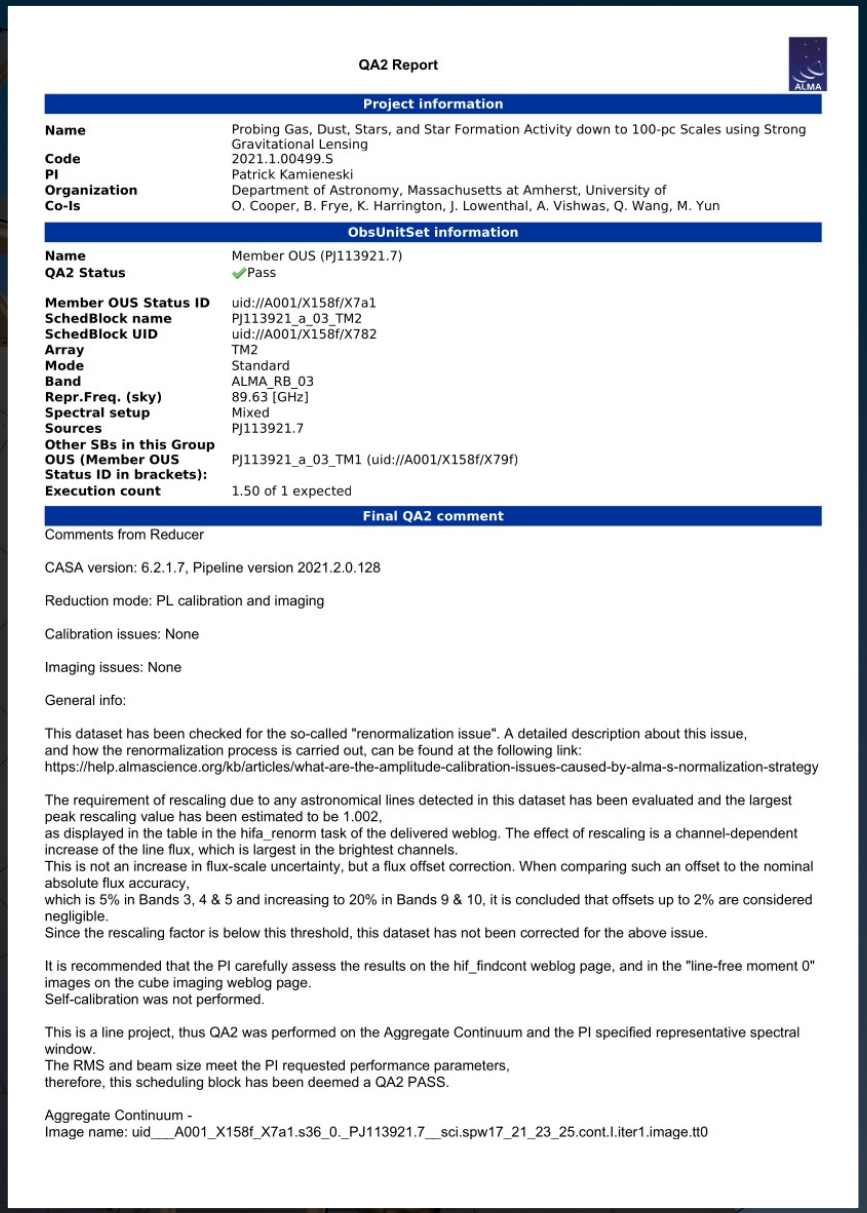


The final two pages show the weather conditions at the site, although this information is also available in the WebLogs.



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

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



QA2 Report

Project information

Name	Probing Gas, Dust, Stars, and Star Formation Activity down to 100-pc Scales using Strong Gravitational Lensing
Code	2021.1.00499.S
PI	Patrick Kamieneski
Organization	Department of Astronomy, Massachusetts at Amherst, University of
Co-Is	O. Cooper, B. Frye, K. Harrington, J. Lowenthal, A. Vishwas, Q. Wang, M. Yun

ObsUnitSet information

Name	Member OUS (PJ113921.7)
QA2 Status	Pass
Member OUS Status ID	uid://A001/X158f/X7a1
SchedBlock name	PJ113921_a_03_TM2
SchedBlock UID	uid://A001/X158f/X782
Array	TM2
Mode	Standard
Band	ALMA_RB_03
Repr.Freq. (sky)	89.63 [GHz]
Spectral setup	Mixed
Sources	PJ113921.7
Other SBs in this Group OUS (Member OUS Status ID in brackets):	PJ113921_a_03_TM1 (uid://A001/X158f/X79f)
Execution count	1.50 of 1 expected

Final QA2 comment

Comments from Reducer

CASA version: 6.2.1.7, Pipeline version 2021.2.0.128

Reduction mode: PL calibration and imaging

Calibration issues: None

Imaging issues: None

General info:

This dataset has been checked for the so-called "renormalization issue". A detailed description about this issue, and how the renormalization process is carried out, can be found at the following link: https://help.almascience.org/kb/articles/what-are-the-amplitude-calibration-issues-caused-by-alma-s-normalization-strategy

The requirement of rescaling due to any astronomical lines detected in this dataset has been evaluated and the largest peak rescaling value has been estimated to be 1.002,
as displayed in the table in the hifa_renorm task of the delivered weblog. The effect of rescaling is a channel-dependent increase of the line flux, which is largest in the brightest channels.
This is not an increase in flux-scale uncertainty, but a flux offset correction. When comparing such an offset to the nominal absolute flux accuracy,
which is 5% in Bands 3, 4 & 5 and increasing to 20% in Bands 9 & 10, it is concluded that offsets up to 2% are considered negligible.
Since the rescaling factor is below this threshold, this dataset has not been corrected for the above issue.

It is recommended that the PI carefully assess the results on the hif_findcont weblog page, and in the "line-free moment 0" images on the cube imaging weblog page.
Self-calibration was not performed.

This is a line project, thus QA2 was performed on the Aggregate Continuum and the PI specified representative spectral window.
The RMS and beam size meet the PI requested performance parameters,
therefore, this scheduling block has been deemed a QA2 PASS.

Aggregate Continuum -
Image name: uid___A001_X158f_X7a1.s36_0._PJ113921.7__sci.spw17_21_23_25.cont.I.iter1.image.tt0

The WebLog contains most of the useful diagnostic information from the QA2 process.

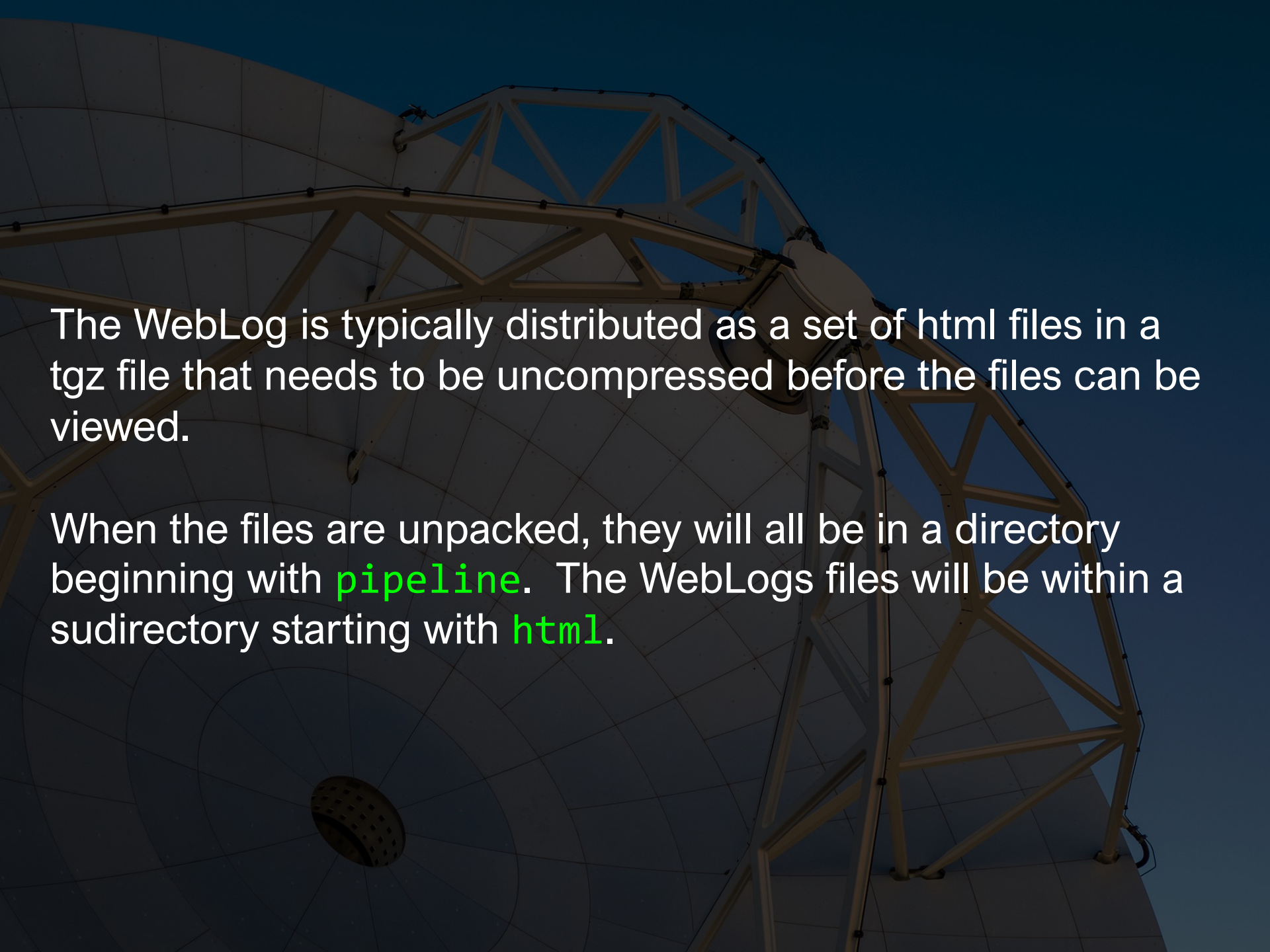
This is produced by the ALMA pipeline as the data are being calibrated and imaged.

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.

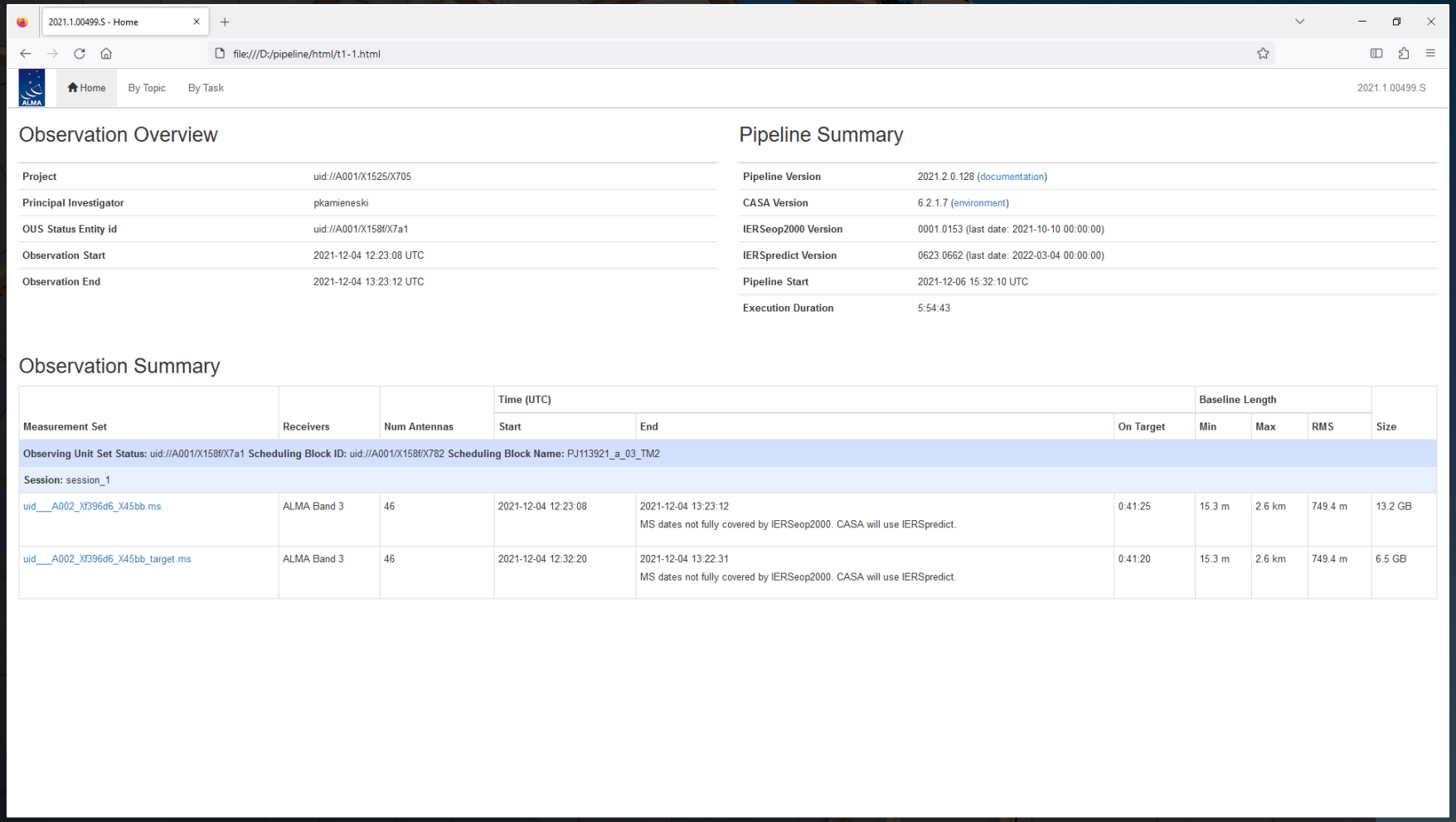
When the files are unpacked, they will all be in a directory beginning with `pipeline`. The WebLogs files will be within a sudirectory starting with `html`.

Most web browsers may not open the WebLogs correctly because of issues with their security settings.

The current recommendation is to use the following steps to open a WebLog:

1. In a terminal, go to the `pipeline*/html` directory with the WebLog.
2. Start CASA in pipeline mode using the `--pipeline` option.
3. At the CASA prompt, type `h_weblog()`.
4. Copy the url printed by this command into the address bar of a web browser.

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.



Observation Overview

Project	uid://A001/X1525/X705
Principal Investigator	pkamieneski
OUS Status Entity id	uid://A001/X158f/X7a1
Observation Start	2021-12-04 12:23:08 UTC
Observation End	2021-12-04 13:23:12 UTC

Pipeline Summary

Pipeline Version	2021.2.0.128 (documentation)
CASA Version	6.2.1.7 (environment)
IERSeop2000 Version	0001.0153 (last date: 2021-10-10 00:00:00)
IERSpredict Version	0623.0662 (last date: 2022-03-04 00:00:00)
Pipeline Start	2021-12-06 15:32:10 UTC
Execution Duration	5:54:43

Observation Summary

			Time (UTC)			Baseline Length			
Measurement Set	**Receivers**	**Num Antennas**	**Start**	**End**	**On Target**	**Min**	**Max**	**RMS**	**Size**
Observing Unit Set Status: uid://A001/X158f/X7a1 **Scheduling Block ID:** uid://A001/X158f/X782 **Scheduling Block Name:** PJ113921_a_03_TM2									
Session: session_1									
uid___A002_Xf396d6_X45bb.ms	ALMA Band 3	46	2021-12-04 12:23:08	2021-12-04 13:23:12 MS dates not fully covered by IERSeop2000. CASA will use IERSpredict.	0:41:25	15.3 m	2.6 km	749.4 m	13.2 GB
uid___A002_Xf396d6_X45bb_target.ms	ALMA Band 3	46	2021-12-04 12:32:20	2021-12-04 13:22:31 MS dates not fully covered by IERSeop2000. CASA will use IERSpredict.	0:41:20	15.3 m	2.6 km	749.4 m	6.5 GB

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

2021.1.00499.S - Session Data Details

file:///D:/pipeline/html/t2-1.html?sidebar=sidebar_uid___A002_Xf396d6_X45bb_ms&subpage=t2-1_details.html

Home | By Topic | By Task | 2021.1.00499.S

Session: session_1

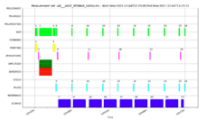
- uid___A002_Xf396d6_X45bb.ms
- uid___A002_Xf396d6_X45bb_target.ms

Overview of 'uid___A002_Xf396d6_X45bb.ms'

Observation Execution Time

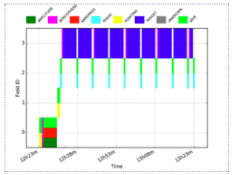
Start Time	2021-12-04 12:23:08
End Time	2021-12-04 13:23:12
Total Time on Source	0:55:15
Total Time on Science Target	0:41:25

LISTOBS OUTPUT



Intent vs Time

Track scan intent vs time



Field vs Time

Track observed field vs time

Spatial Setup

Science Targets	'PJ113921.7'
Calibrators	'J1058+0133', 'J1148+1840' and 'J1150+2417'

Spectral Setup

All Bands	'ALMA Band 3' and 'WVR'
Science Bands	'ALMA Band 3'

Antenna Setup

Min Baseline	15.3 m
Max Baseline	2.6 km
Number of Baselines	1035
Number of Antennas	46
Antenna Diameters	46 of 12 m

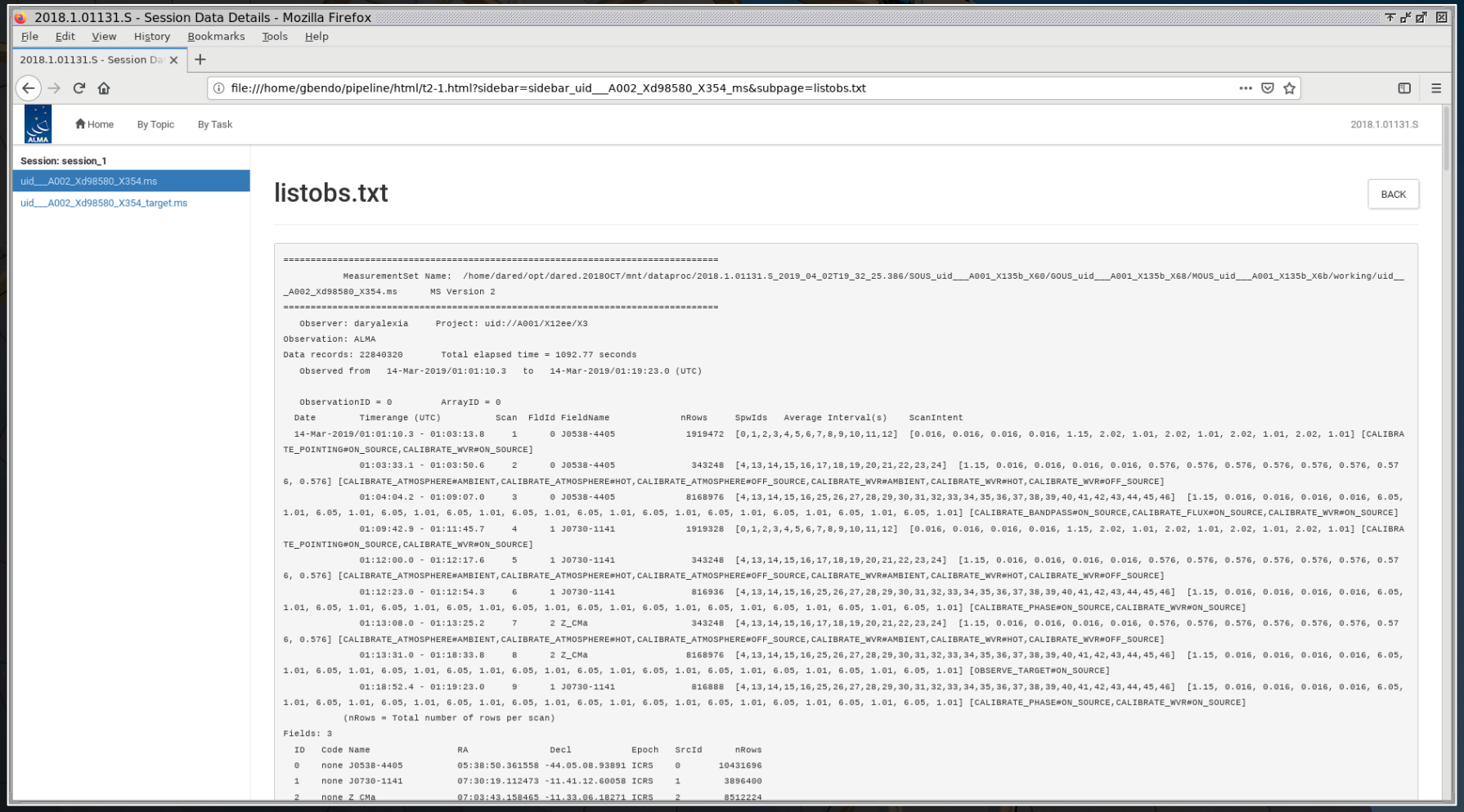
Sky Setup

Min Elevation	36.99 degrees
Max Elevation	54.03 degrees

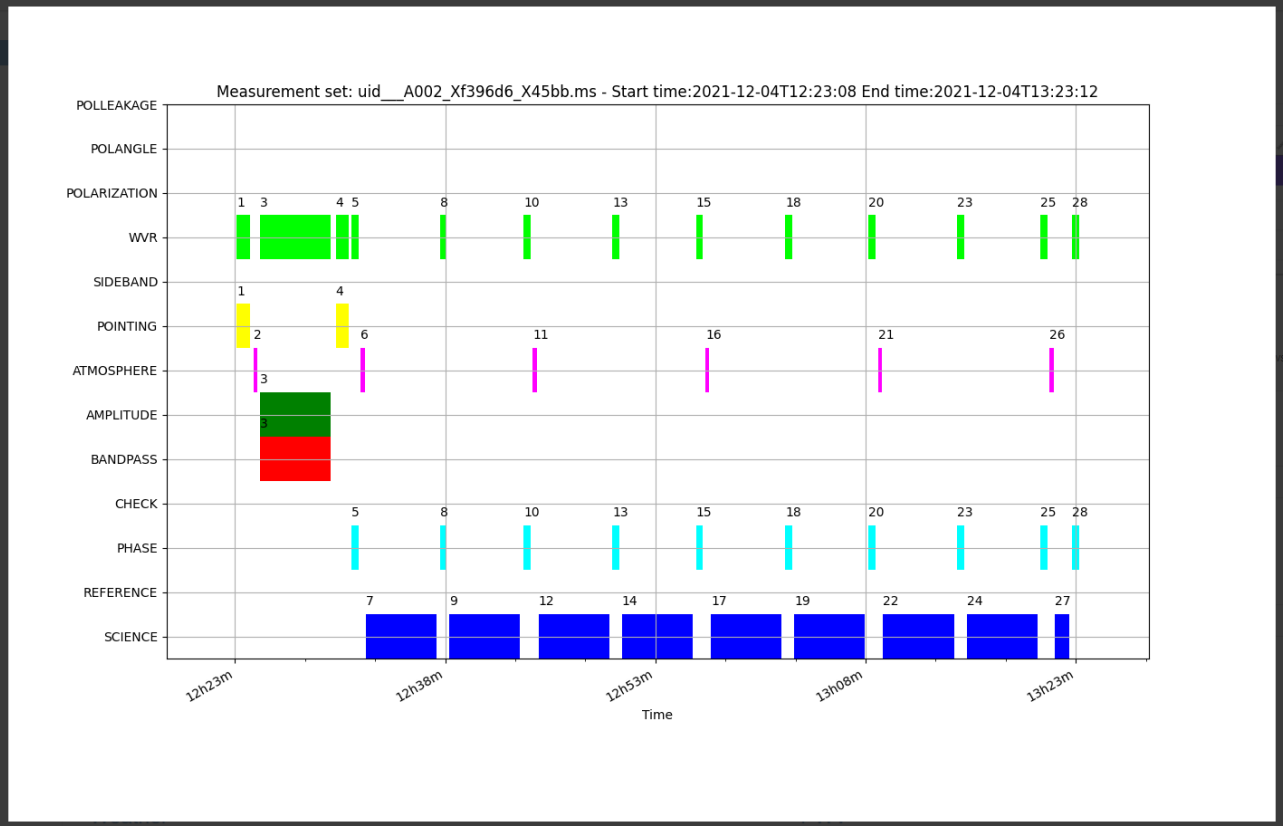
Weather

PWV

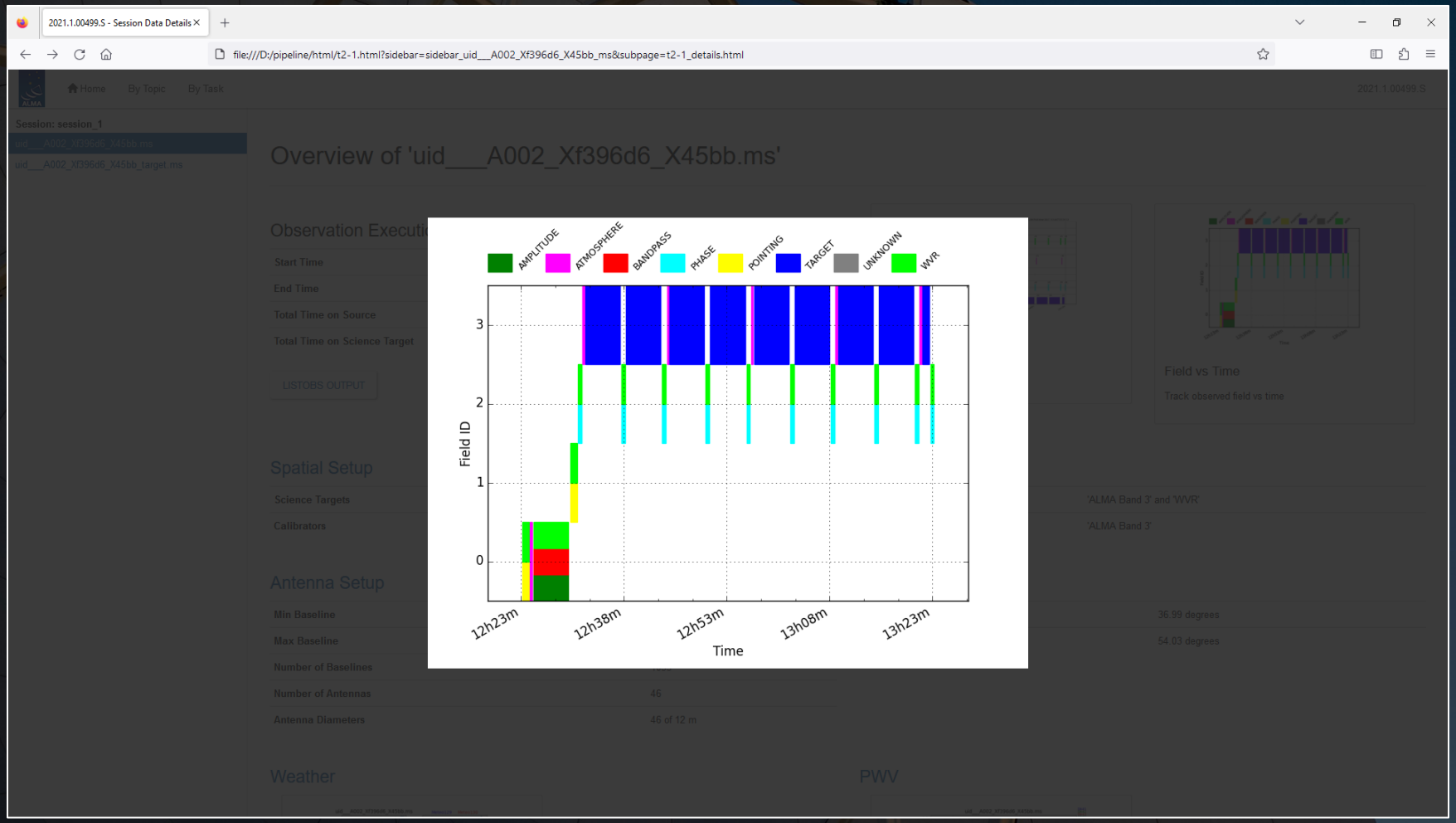
The listobs output button displays a text file with summary information about the sequence of observations, the fields, the spectral windows, and the antennas. Versions of this file can also be created using the listobs command in CASA.



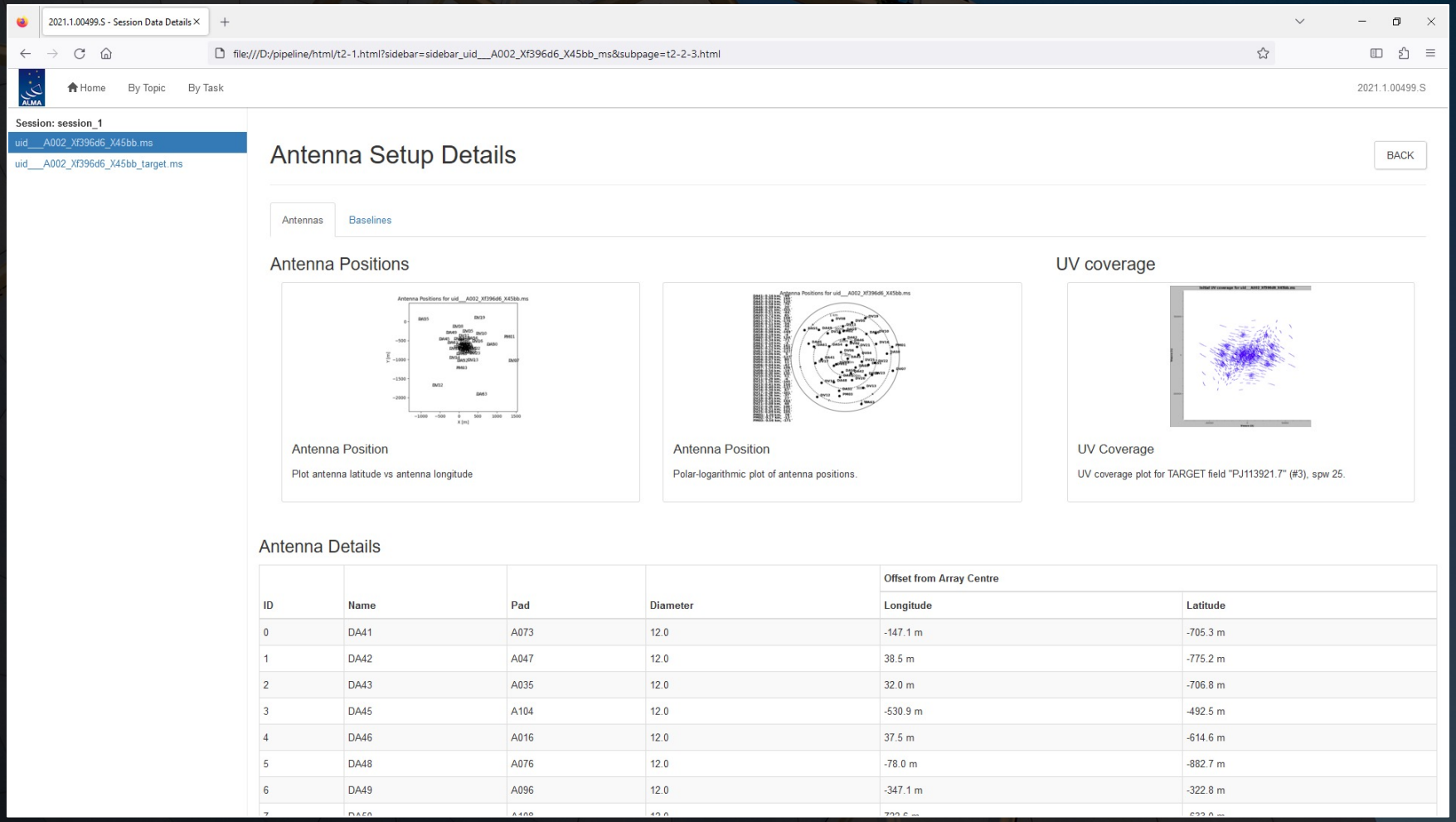
The intent versus time plot shows the sequence of the observations as well as the purpose of those observations. Some observations have multiple purposes.



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).

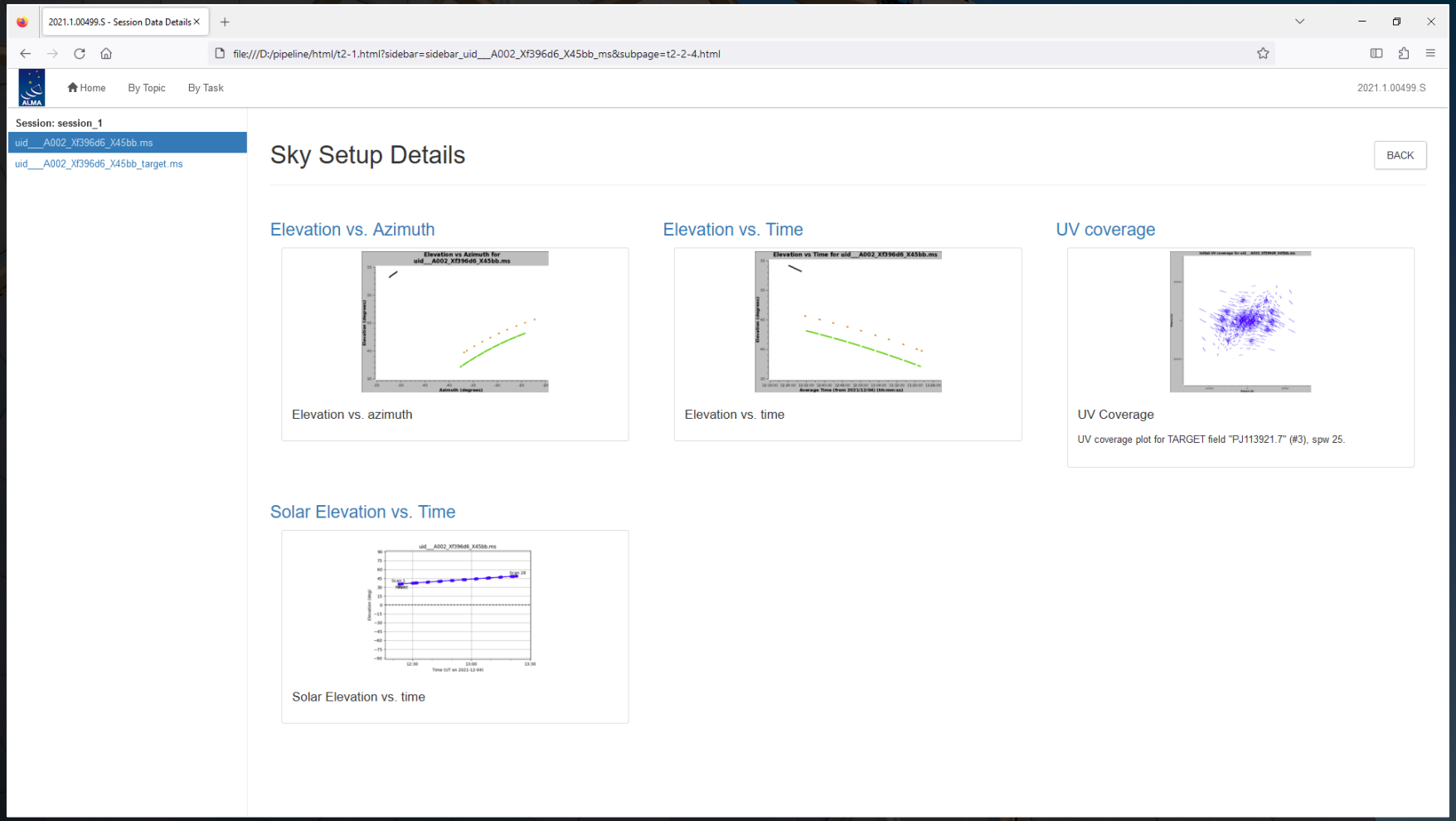


The antenna setup page shows the location of the antennas and the resulting uv coverage (which is related to the final angular resolution and maximum recoverable scale of the data).

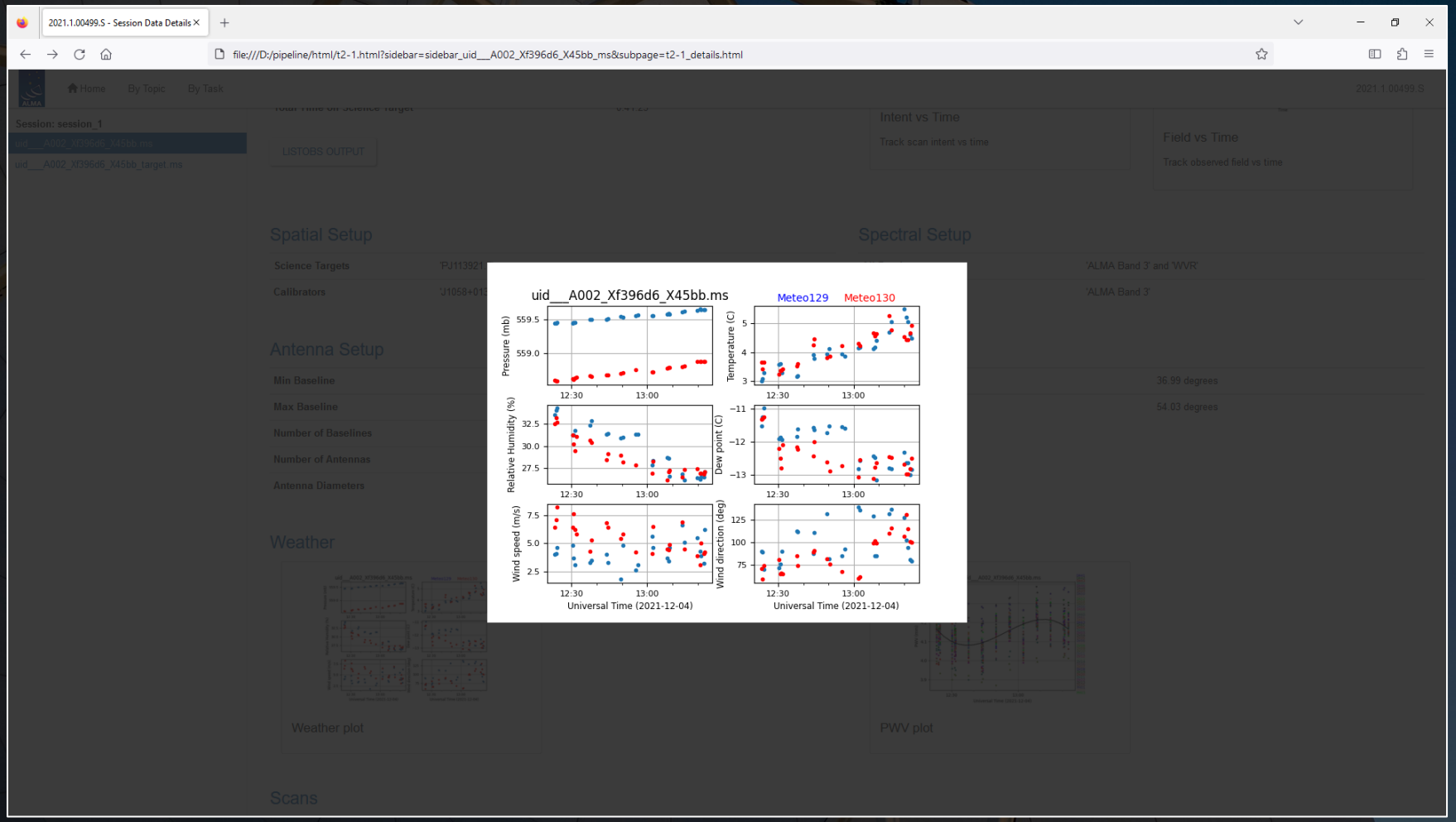


ID	Name	Pad	Diameter	Offset from Array Centre	
				Longitude	Latitude
0	DA41	A073	12.0	-147.1 m	-705.3 m
1	DA42	A047	12.0	38.5 m	-775.2 m
2	DA43	A035	12.0	32.0 m	-706.8 m
3	DA45	A104	12.0	-530.9 m	-492.5 m
4	DA46	A016	12.0	37.5 m	-614.6 m
5	DA48	A076	12.0	-78.0 m	-882.7 m
6	DA49	A096	12.0	-347.1 m	-322.8 m

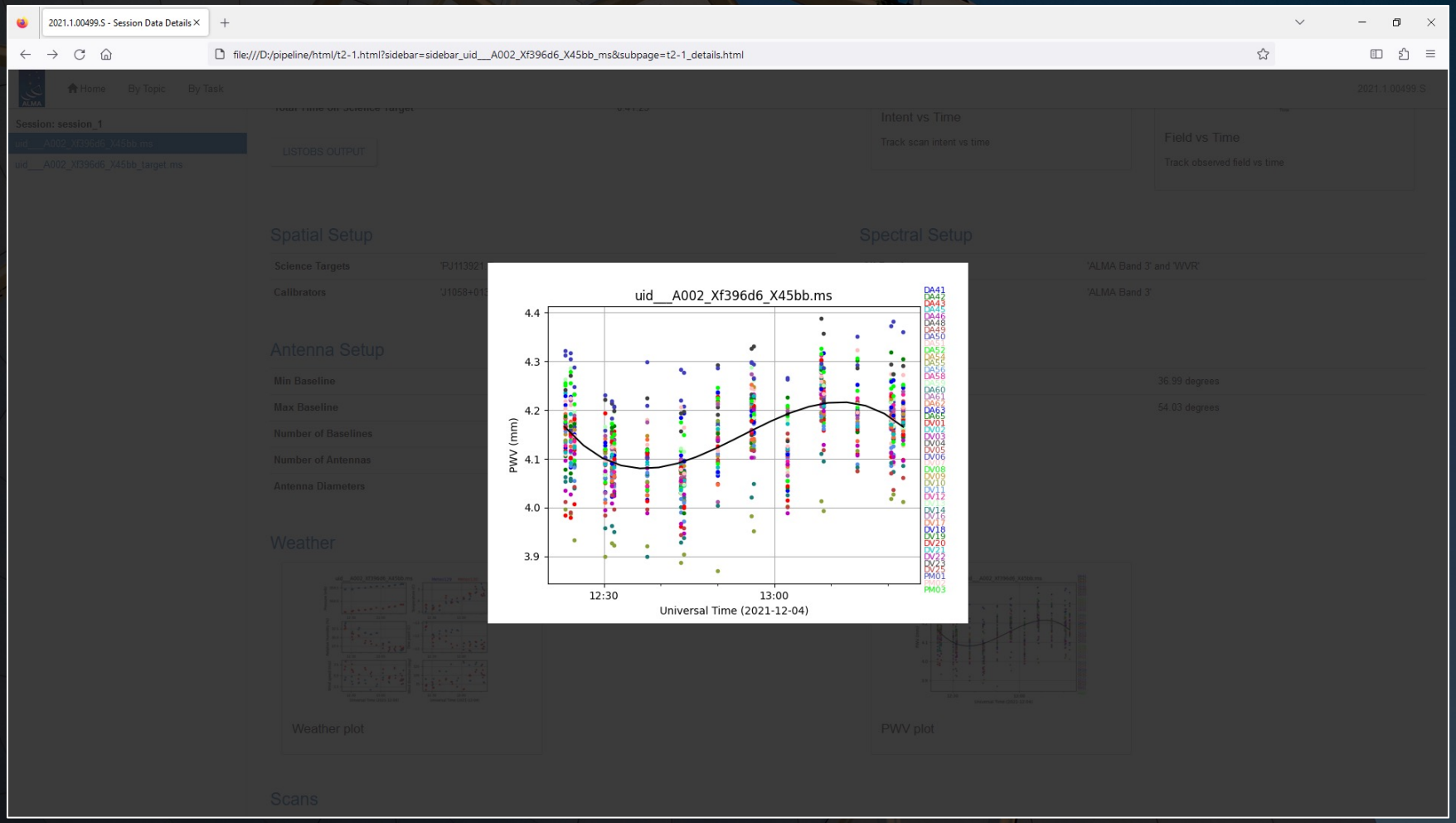
The sky setup shows the elevation and azimuth of the fields during the observations. The beam for sources observed at low elevations (<45°) could appear elongated. Calibration problems may occur if the phase calibrator and science target are too far apart (>10°).



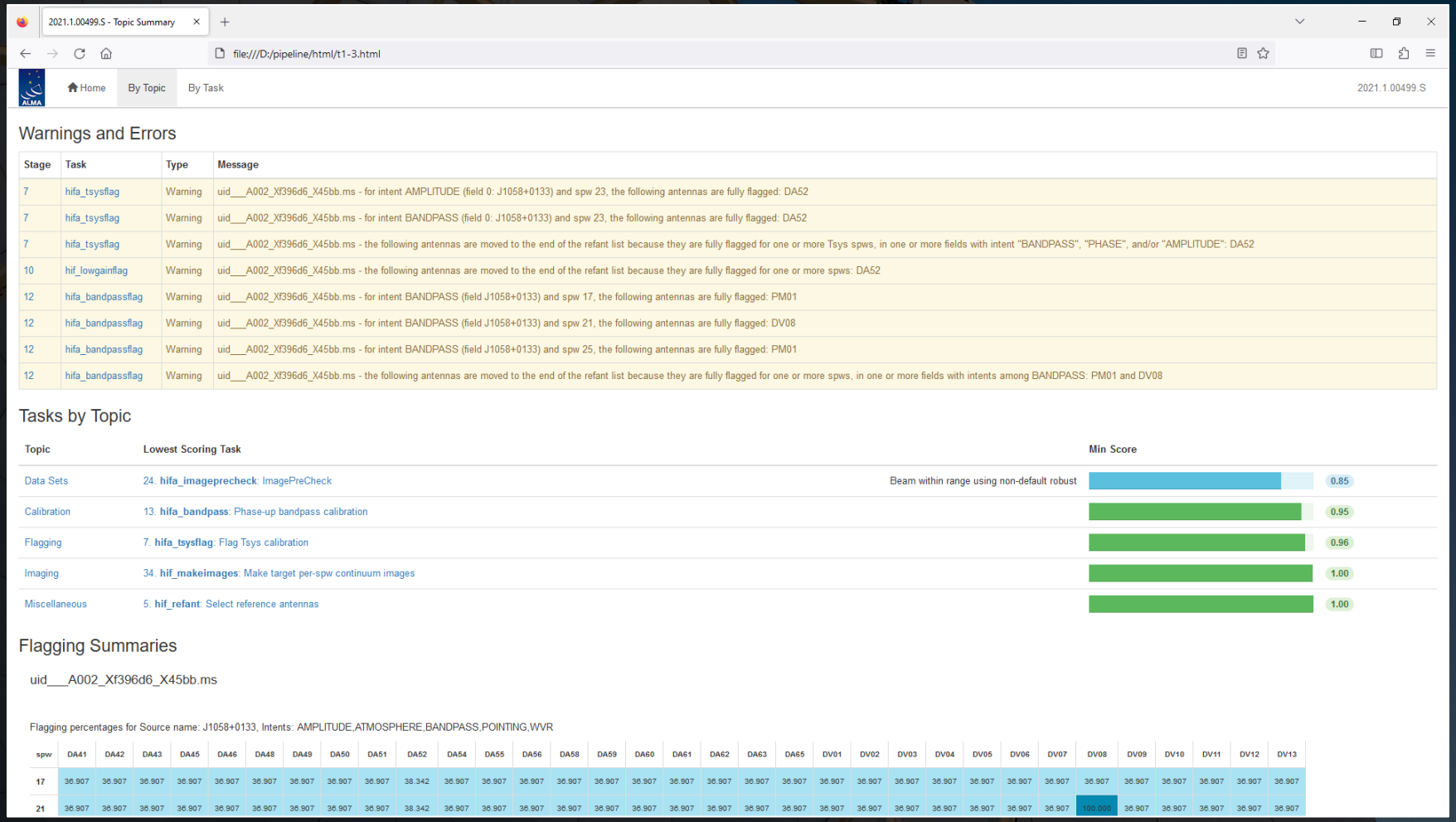
The weather and PWV plots are useful for understanding the observing conditions. High humidity or PWV values could affect the S/N of the data. Sudden changes in the weather conditions could cause sudden changes in the phases and amplitudes.



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



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.



2021.1.00499.S - Topic Summary

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Warnings and Errors

Stage	Task	Type	Message
7	hifa_tsysflag	Warning	uid___A002_Xf396d6_X45bb.ms - for intent AMPLITUDE (field 0: J1058+0133) and spw 23, the following antennas are fully flagged: DA52
7	hifa_tsysflag	Warning	uid___A002_Xf396d6_X45bb.ms - for intent BANDPASS (field 0: J1058+0133) and spw 23, the following antennas are fully flagged: DA52
7	hifa_tsysflag	Warning	uid___A002_Xf396d6_X45bb.ms - the following antennas are moved to the end of the refant list because they are fully flagged for one or more Tsys spws, in one or more fields with intent "BANDPASS", "PHASE", and/or "AMPLITUDE": DA52
10	hif_lowgainflag	Warning	uid___A002_Xf396d6_X45bb.ms - the following antennas are moved to the end of the refant list because they are fully flagged for one or more spws: DA52
12	hifa_bandpassflag	Warning	uid___A002_Xf396d6_X45bb.ms - for intent BANDPASS (field J1058+0133) and spw 17, the following antennas are fully flagged: PM01
12	hifa_bandpassflag	Warning	uid___A002_Xf396d6_X45bb.ms - for intent BANDPASS (field J1058+0133) and spw 21, the following antennas are fully flagged: DV08
12	hifa_bandpassflag	Warning	uid___A002_Xf396d6_X45bb.ms - for intent BANDPASS (field J1058+0133) and spw 25, the following antennas are fully flagged: PM01
12	hifa_bandpassflag	Warning	uid___A002_Xf396d6_X45bb.ms - the following antennas are moved to the end of the refant list because they are fully flagged for one or more spws, in one or more fields with intents among BANDPASS: PM01 and DV08

Tasks by Topic

Topic	Lowest Scoring Task		Min Score
Data Sets	24. **hifa_imageprecheck**: ImagePreCheck	Beam within range using non-default robust	0.85
Calibration	13. **hifa_bandpass**: Phase-up bandpass calibration		0.95
Flagging	7. **hifa_tsysflag**: Flag Tsys calibration		0.96
Imaging	34. **hif_makeimages**: Make target per-spw continuum images		1.00
Miscellaneous	5. **hif_refant**: Select reference antennas		1.00

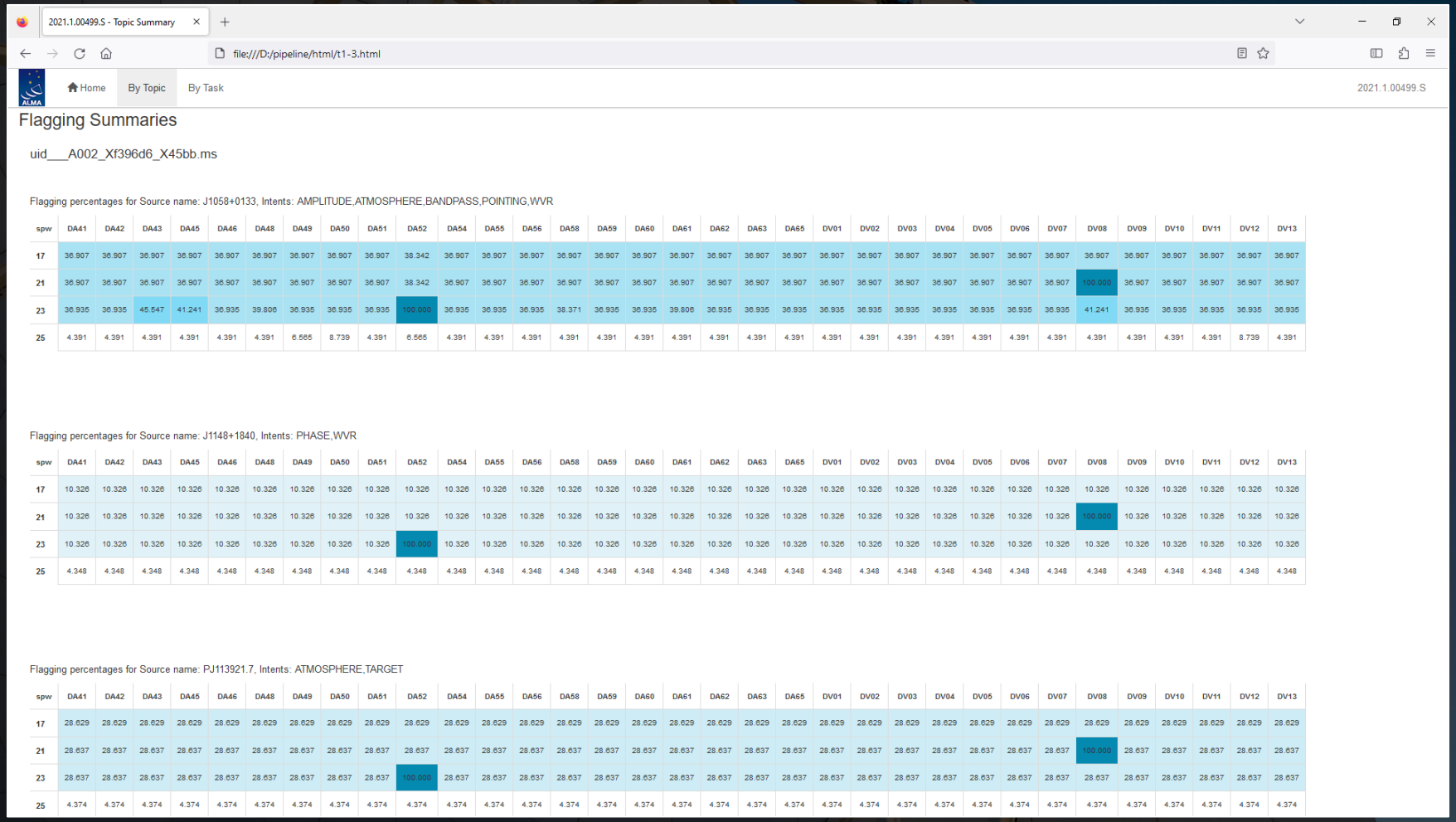
Flagging Summaries

uid___A002_Xf396d6_X45bb.ms

Flagging percentages for Source name: J1058+0133, Intents: AMPLITUDE,ATMOSPHERE,BANDPASS,POINTING,WVR

spw	DA41	DA42	DA43	DA45	DA46	DA48	DA49	DA50	DA51	DA52	DA54	DA55	DA56	DA58	DA59	DA60	DA61	DA62	DA63	DA65	DV01	DV02	DV03	DV04	DV05	DV06	DV07	DV08	DV09	DV10	DV11	DV12	DV13
17	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	38.342	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907
21	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	38.342	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	100.000	36.907	36.907	36.907	36.907	36.907

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



2021.1.00499.S - Topic Summary

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Flagging Summaries

uid___A002_Xf396d6_X45bb.ms

Flagging percentages for Source name: J1058+0133, Intents: AMPLITUDE,ATMOSPHERE,BANDPASS,POINTING,WVR

spw	DA41	DA42	DA43	DA45	DA46	DA48	DA49	DA50	DA51	DA52	DA54	DA55	DA56	DA58	DA59	DA60	DA61	DA62	DA63	DA65	DV01	DV02	DV03	DV04	DV05	DV06	DV07	DV08	DV09	DV10	DV11	DV12	DV13
17	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	38.342	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907
21	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	38.342	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	100.000	36.907	36.907	36.907	36.907	36.907
23	36.935	36.935	45.547	41.241	36.935	39.806	36.935	36.935	36.935	100.000	36.935	36.935	36.935	38.371	36.935	36.935	39.806	36.935	36.935	36.935	36.935	36.935	36.935	36.935	36.935	36.935	36.935	41.241	36.935	36.935	36.935	36.935	36.935
25	4.391	4.391	4.391	4.391	4.391	4.391	6.565	8.739	4.391	6.565	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	8.739	4.391

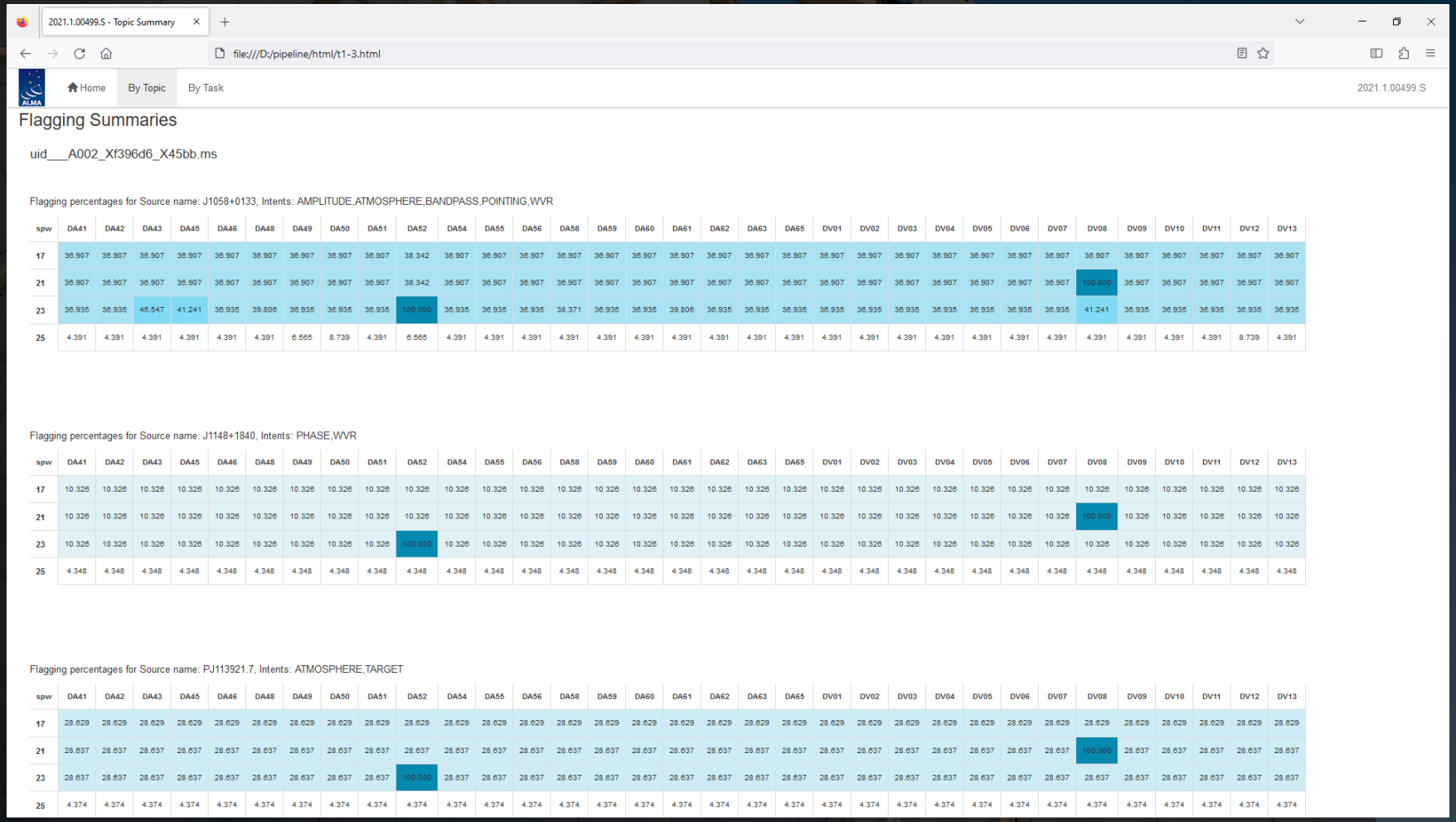
Flagging percentages for Source name: J1148+1840, Intents: PHASE,WVR

spw	DA41	DA42	DA43	DA45	DA46	DA48	DA49	DA50	DA51	DA52	DA54	DA55	DA56	DA58	DA59	DA60	DA61	DA62	DA63	DA65	DV01	DV02	DV03	DV04	DV05	DV06	DV07	DV08	DV09	DV10	DV11	DV12	DV13
17	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326
21	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	100.000	10.326	10.326	10.326	10.326	10.326
23	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	100.000	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326
25	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348

Flagging percentages for Source name: PJ113921.7, Intents: ATMOSPHERE,TARGET

spw	DA41	DA42	DA43	DA45	DA46	DA48	DA49	DA50	DA51	DA52	DA54	DA55	DA56	DA58	DA59	DA60	DA61	DA62	DA63	DA65	DV01	DV02	DV03	DV04	DV05	DV06	DV07	DV08	DV09	DV10	DV11	DV12	DV13
17	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629
21	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	100.000	28.637	28.637	28.637	28.637	28.637
23	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	100.000	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637
25	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374

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.



2021.1.00499.S - Topic Summary

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Flagging Summaries

uid___A002_Xf396d6_X45bb.ms

Flagging percentages for Source name: J1058+0133, Intents: AMPLITUDE,ATMOSPHERE,BANDPASS,POINTING,WVR

spw	DA41	DA42	DA43	DA45	DA46	DA48	DA49	DA50	DA51	DA52	DA54	DA55	DA56	DA58	DA59	DA60	DA61	DA62	DA63	DA65	DV01	DV02	DV03	DV04	DV05	DV06	DV07	DV08	DV09	DV10	DV11	DV12	DV13
17	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	38.342	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907
21	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	38.342	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	36.907	100.000	36.907	36.907	36.907	36.907	36.907
23	36.935	36.935	45.547	41.241	36.935	39.806	36.935	36.935	36.935	100.000	36.935	36.935	36.935	38.371	36.935	36.935	39.806	36.935	36.935	36.935	36.935	36.935	36.935	36.935	36.935	36.935	36.935	41.241	36.935	36.935	36.935	36.935	36.935
25	4.391	4.391	4.391	4.391	4.391	4.391	6.565	8.739	4.391	6.565	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	4.391	8.739	4.391

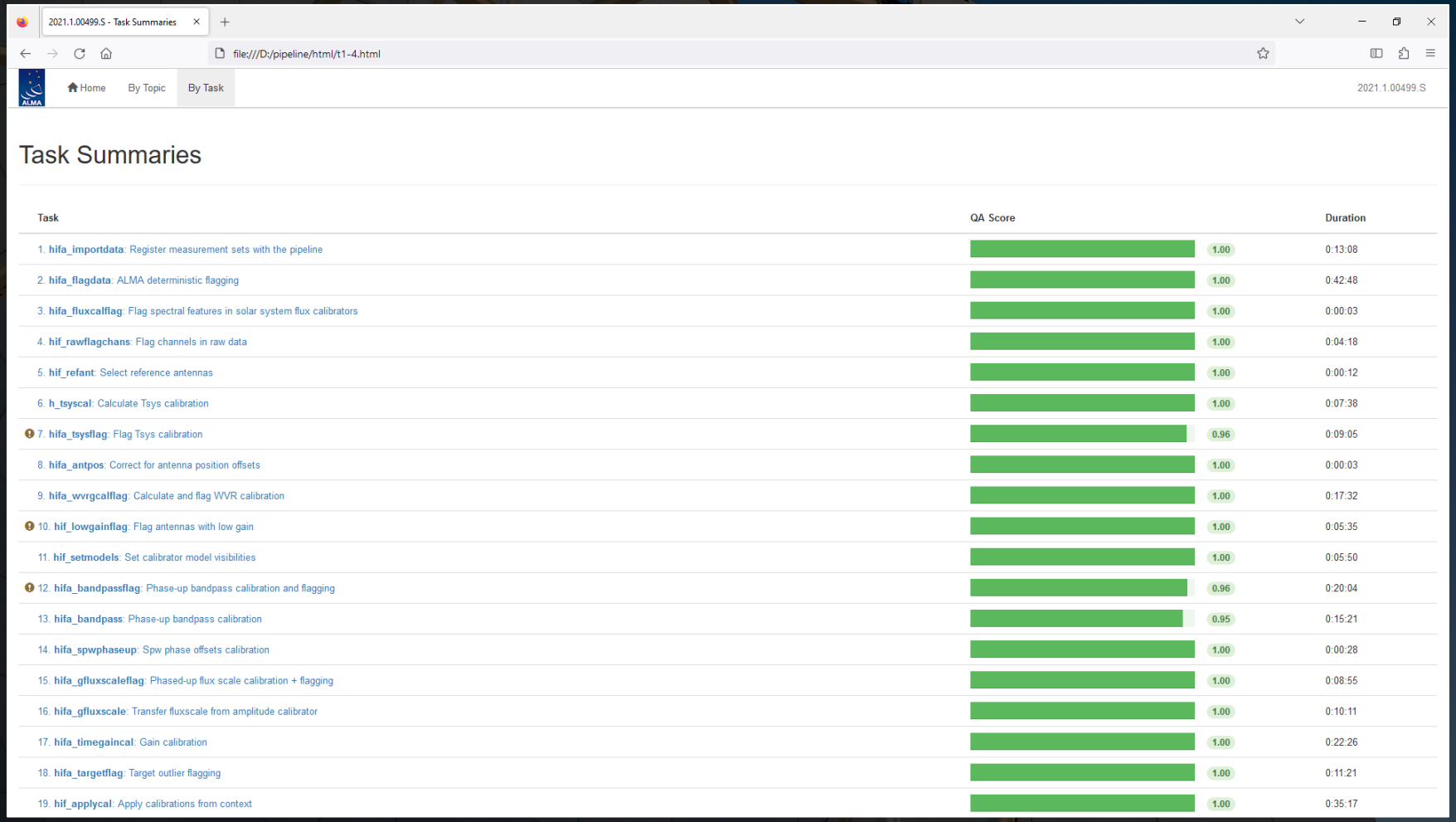
Flagging percentages for Source name: J1148+1840, Intents: PHASE,WVR

spw	DA41	DA42	DA43	DA45	DA46	DA48	DA49	DA50	DA51	DA52	DA54	DA55	DA56	DA58	DA59	DA60	DA61	DA62	DA63	DA65	DV01	DV02	DV03	DV04	DV05	DV06	DV07	DV08	DV09	DV10	DV11	DV12	DV13
17	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326
21	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	100.000	10.326	10.326	10.326	10.326	10.326
23	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	100.000	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326	10.326
25	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348	4.348

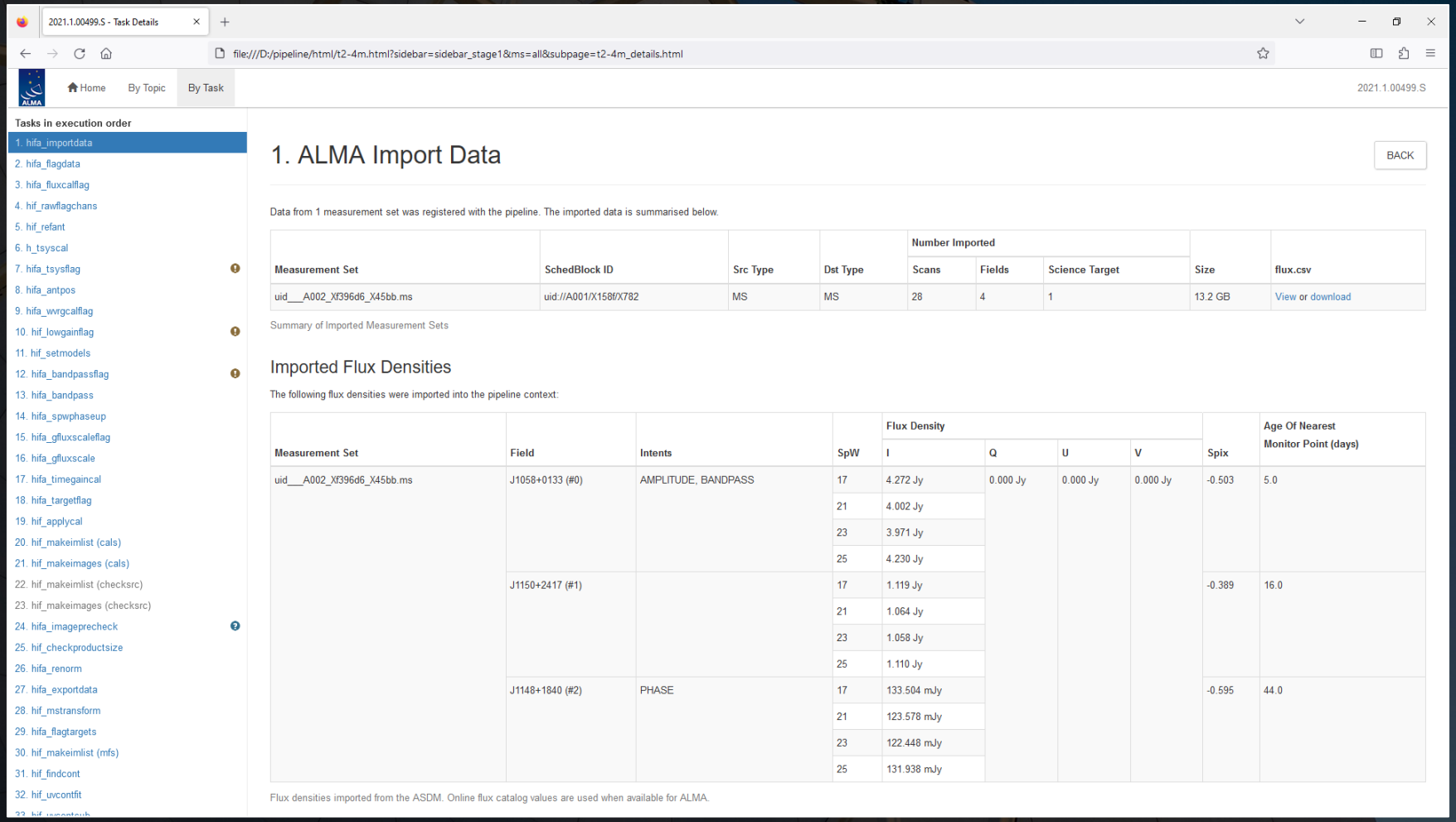
Flagging percentages for Source name: PJ113921.7, Intents: ATMOSPHERE,TARGET

spw	DA41	DA42	DA43	DA45	DA46	DA48	DA49	DA50	DA51	DA52	DA54	DA55	DA56	DA58	DA59	DA60	DA61	DA62	DA63	DA65	DV01	DV02	DV03	DV04	DV05	DV06	DV07	DV08	DV09	DV10	DV11	DV12	DV13
17	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629	28.629
21	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	100.000	28.637	28.637	28.637	28.637	28.637
23	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	100.000	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637	28.637
25	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374	4.374

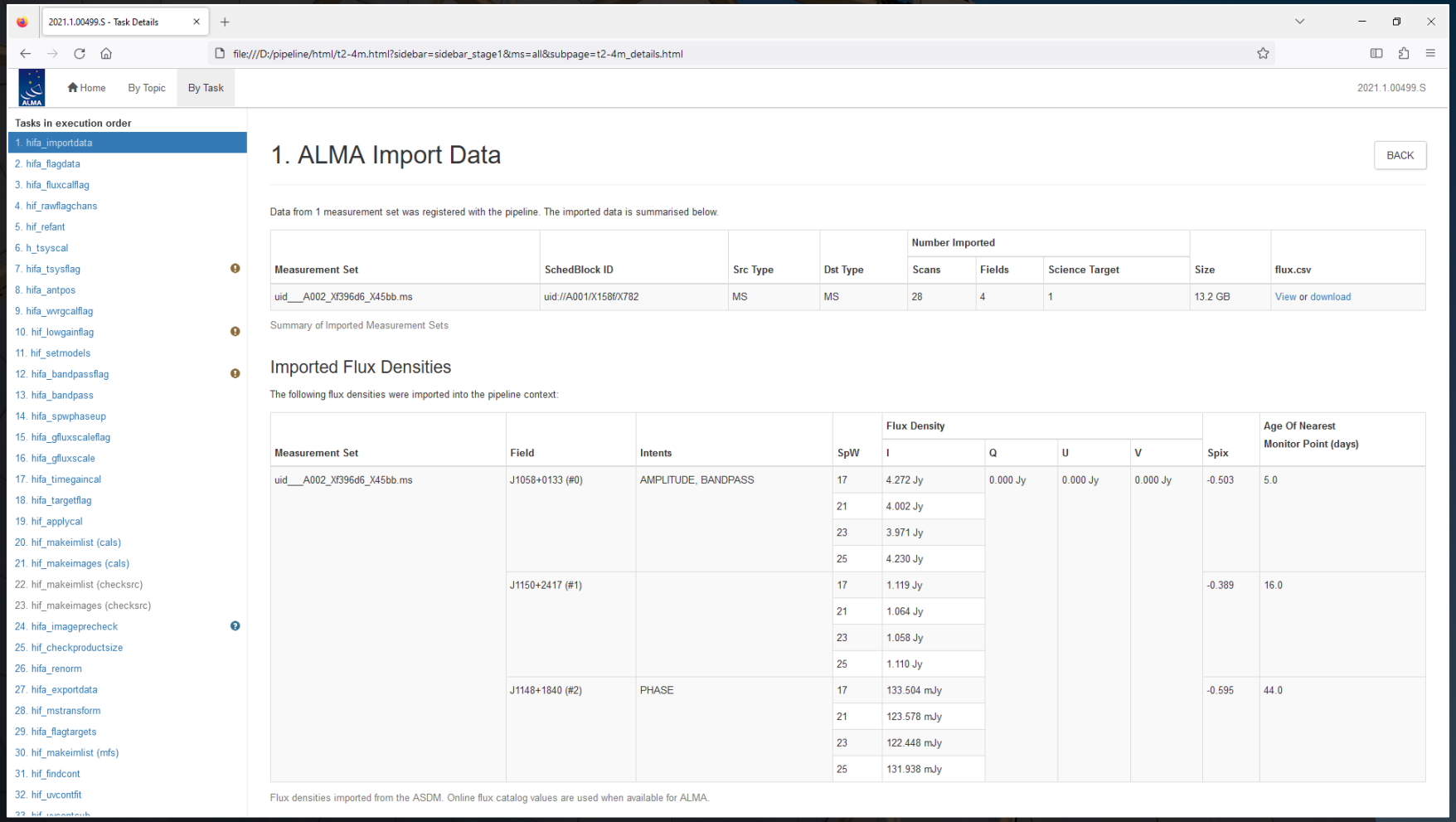
The By Task page lists each of the calibration and imaging steps that were applied in the pipeline. Not all of these steps need to be checked, but the ones listed on the following pages have the most useful information.



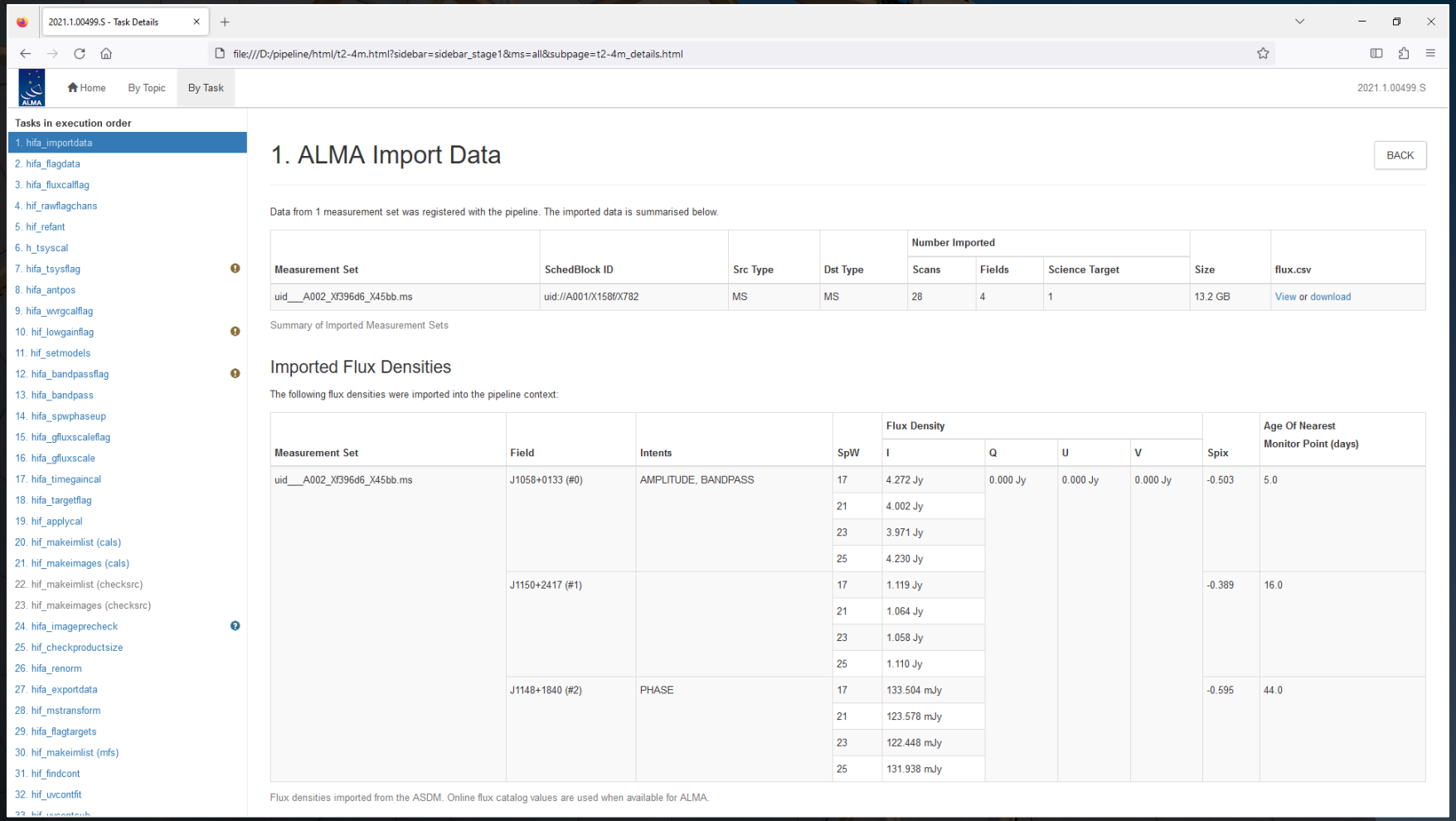
hifa_importdata: This module imports data for the pipeline. The most notable information on this page is the list of model flux densities for the calibration sources.



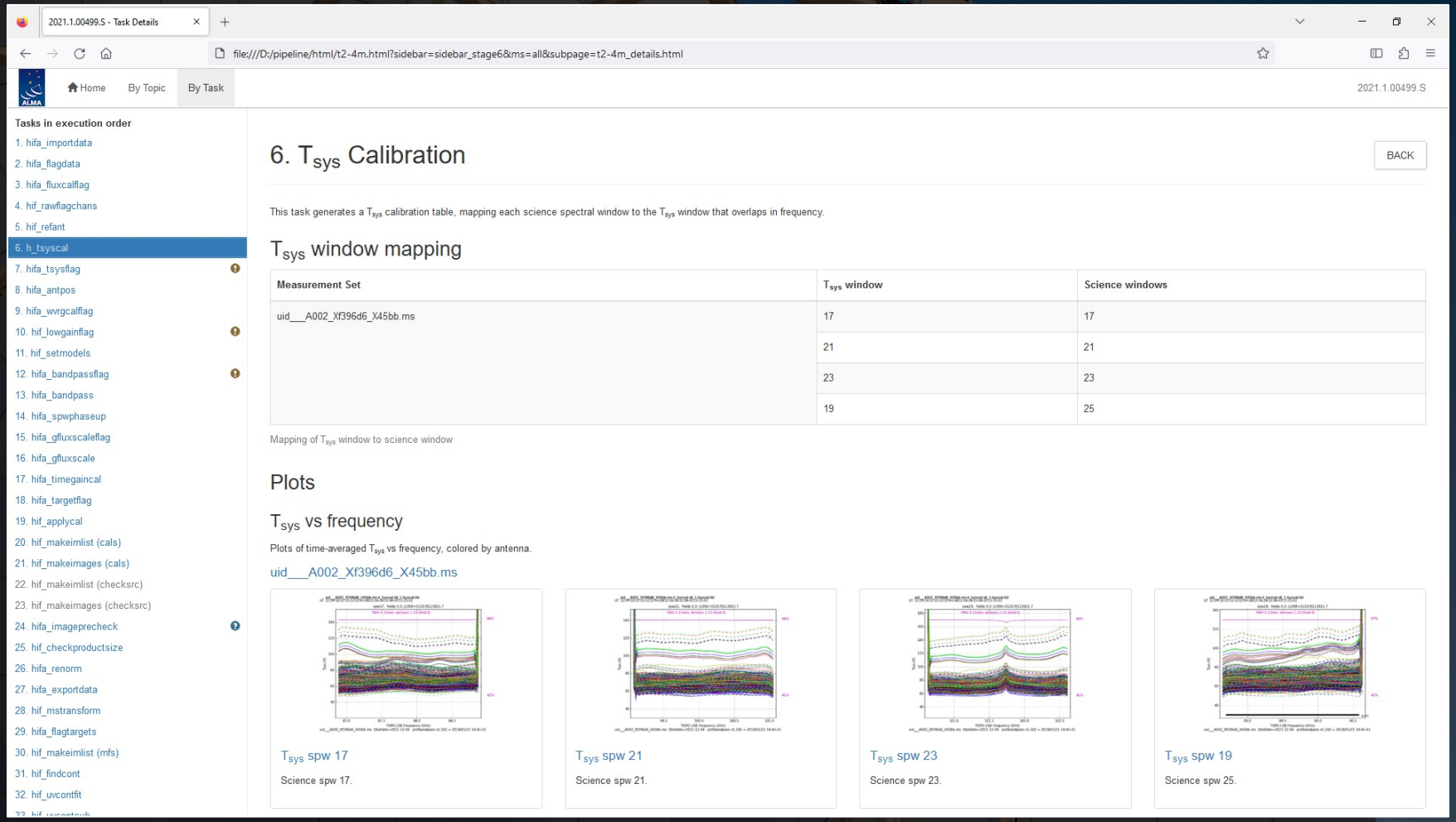
The “age of nearest monitor point” information (when actually listed) will be needed later when comparing these catalogue flux densities to the ones measured in the dataset.



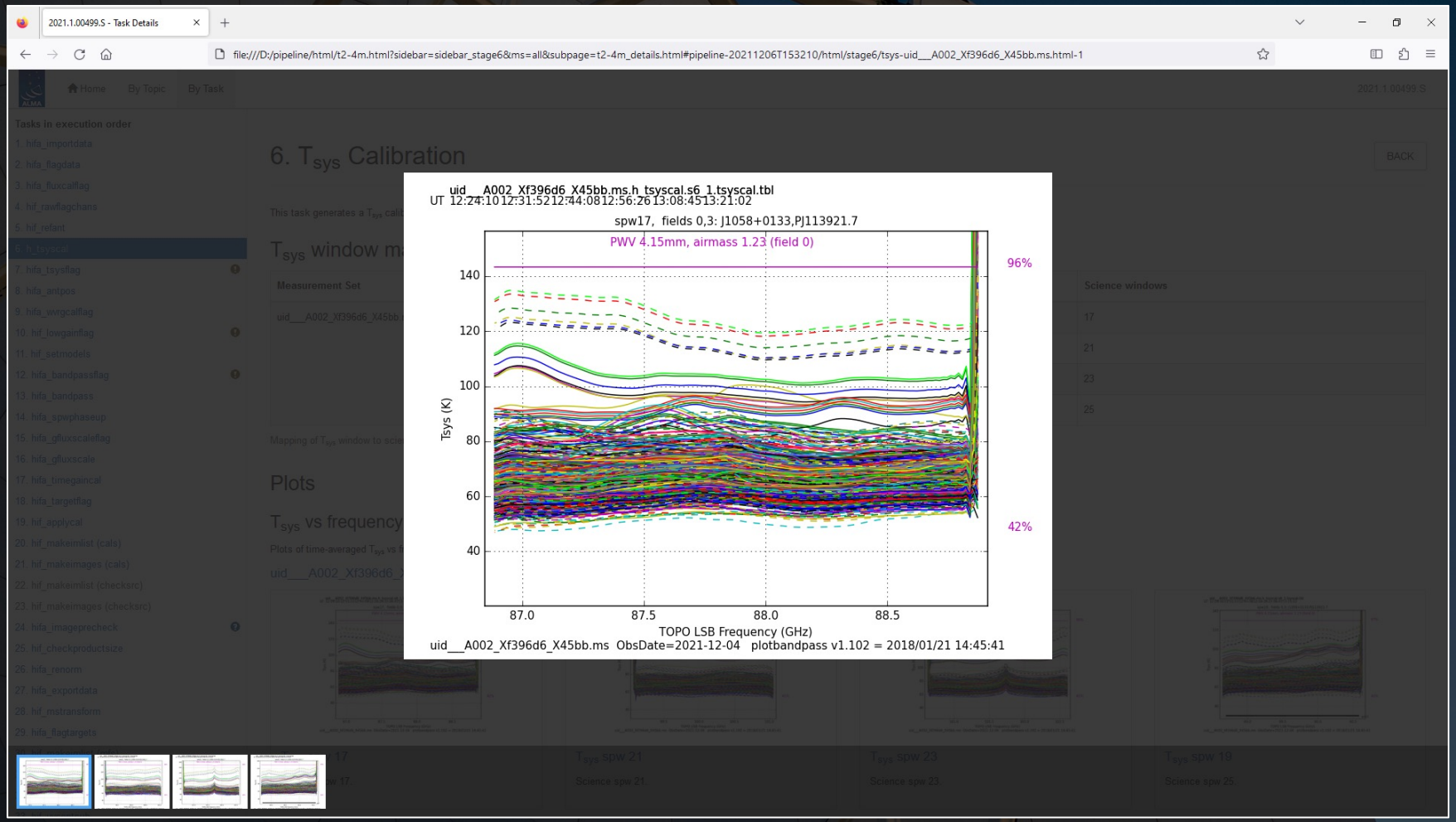
In case of flux calibration problems, these numbers should be compared to data from the ALMA Calibrator Source Catalogue (https://almascience.eso.org/sc/). If the numbers differ, contact the local ARC for assistance with the dataset.



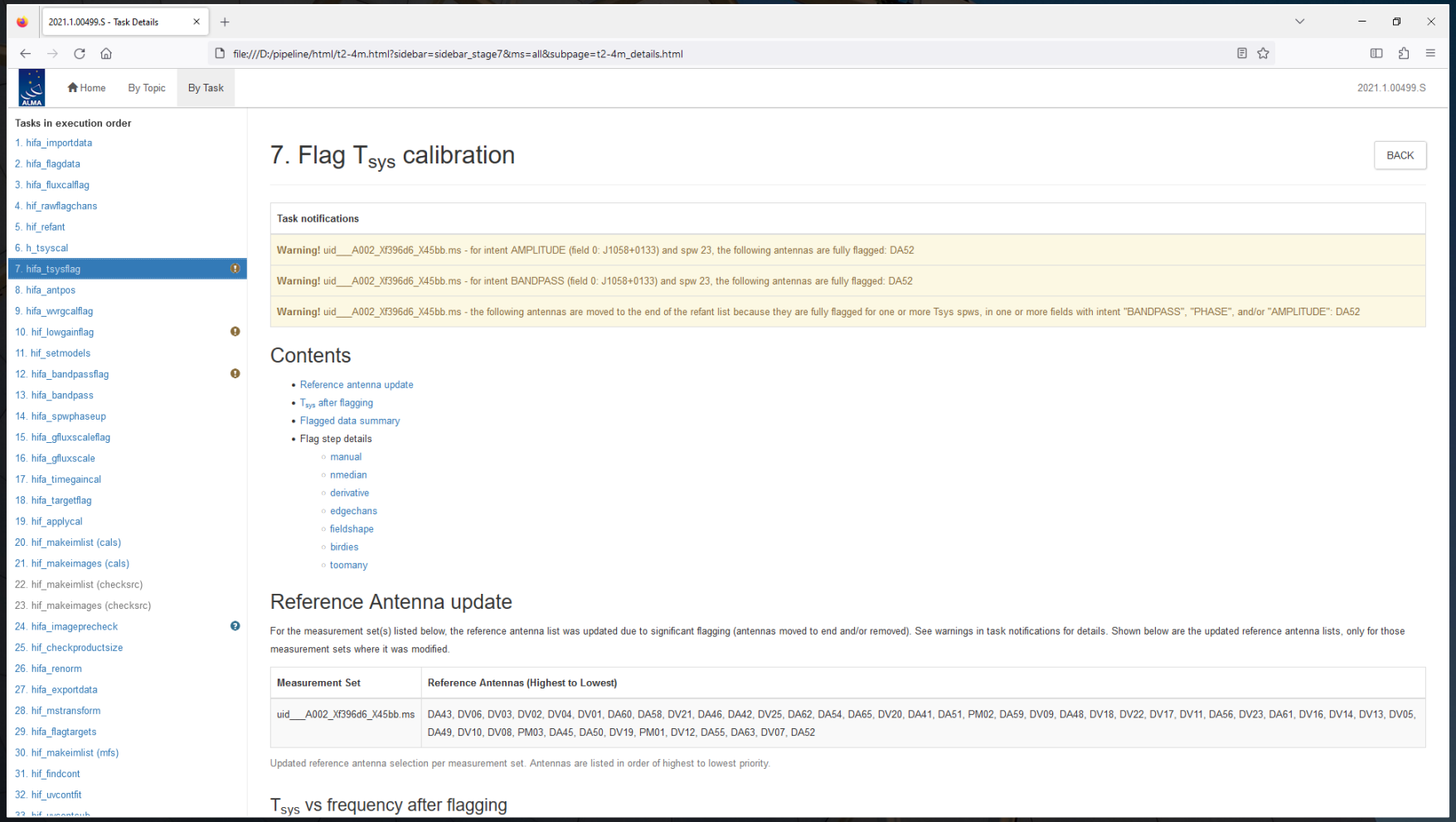
h_tsyscal: In this step, an a priori amplitude correction is derived based on the system temperature of the data. The plots of Tsys versus frequency are important to check.



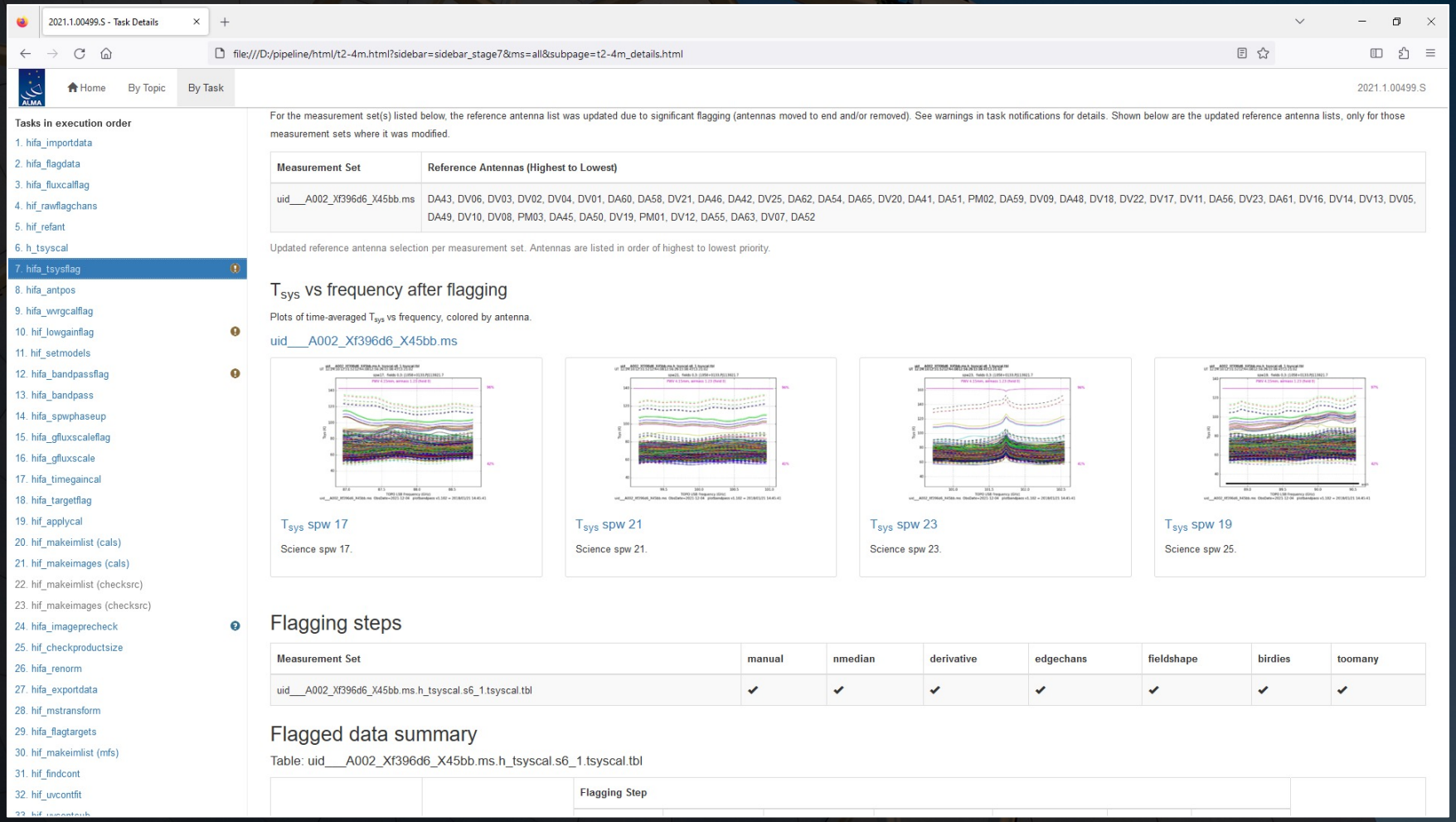
The plots should be devoid of spectral features except in the locations of atmospheric lines, and the amplitudes of all lines in the plots should be similar.



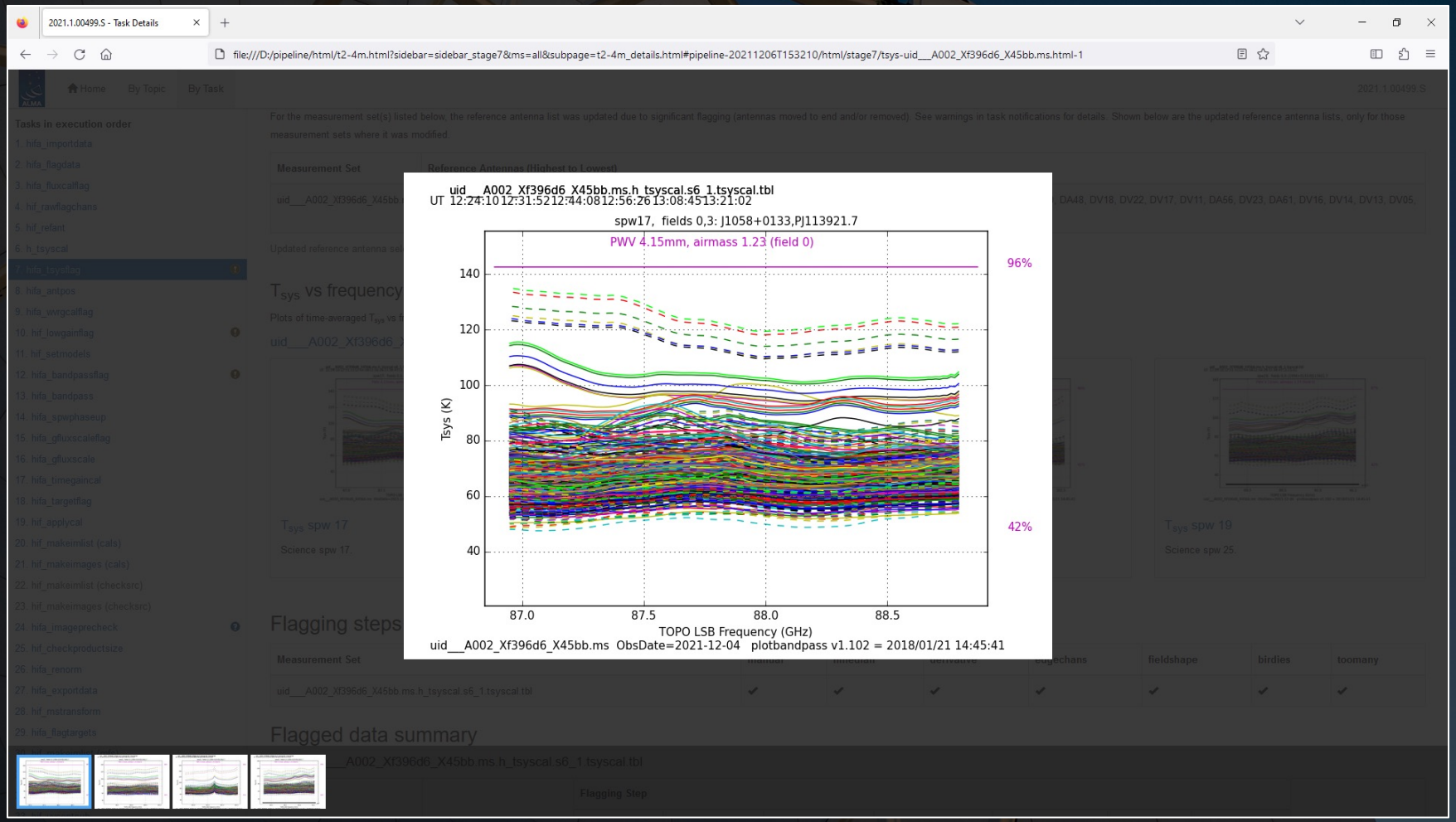
hifa_tsysflag: This step applies flagging to bad T_{sys} data. It is useful to check the plots of T_{sys} versus frequency again to make sure bad data were flagged but good data were not. (Data covering atmospheric features should not necessarily be flagged here.)



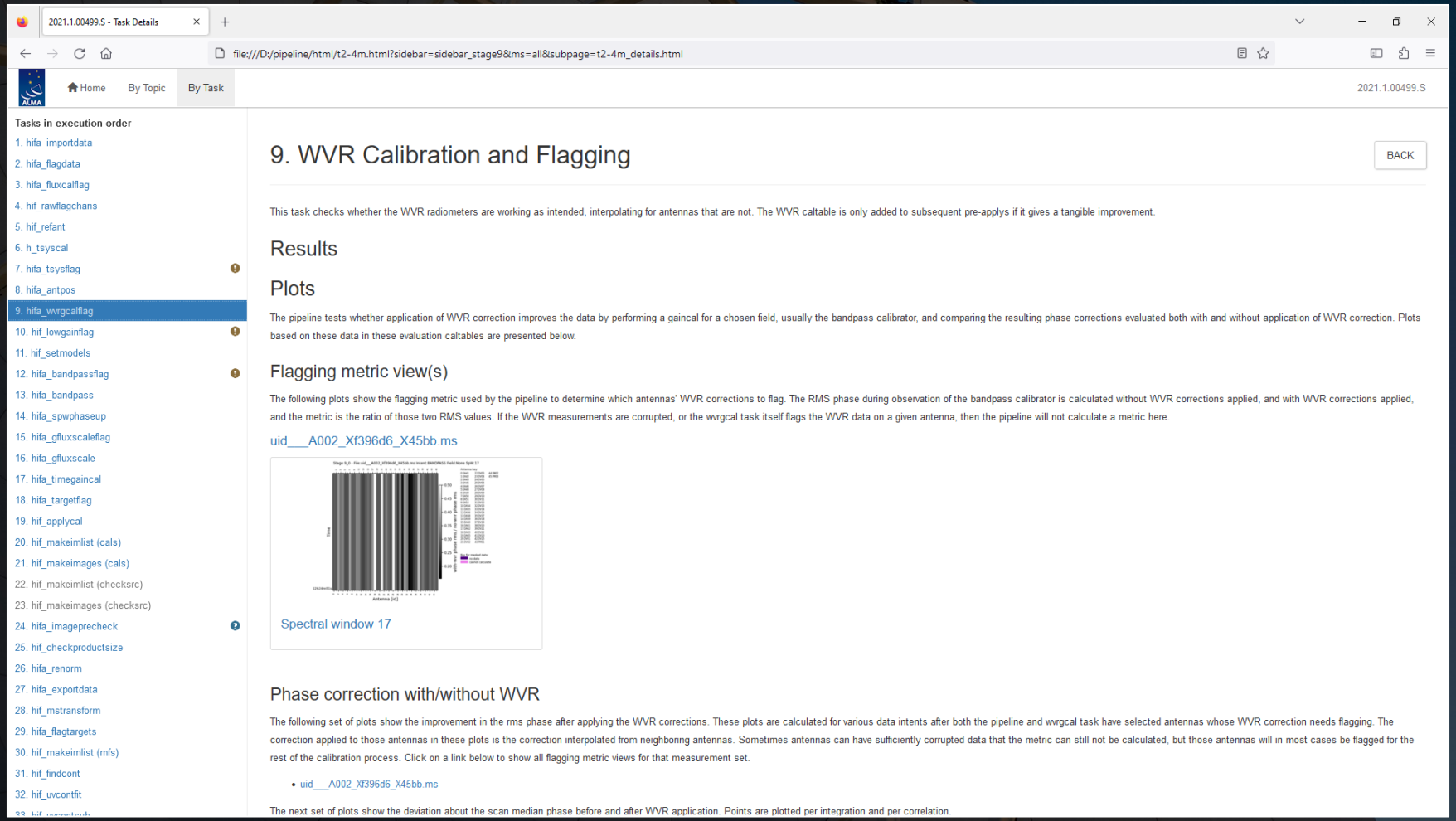
hifa_tsysflag: This step applies flagging to bad T_{sys} data. It is useful to check the plots of T_{sys} versus frequency again to make sure bad data were flagged but good data were not. (Data covering atmospheric features should not necessarily be flagged here.)



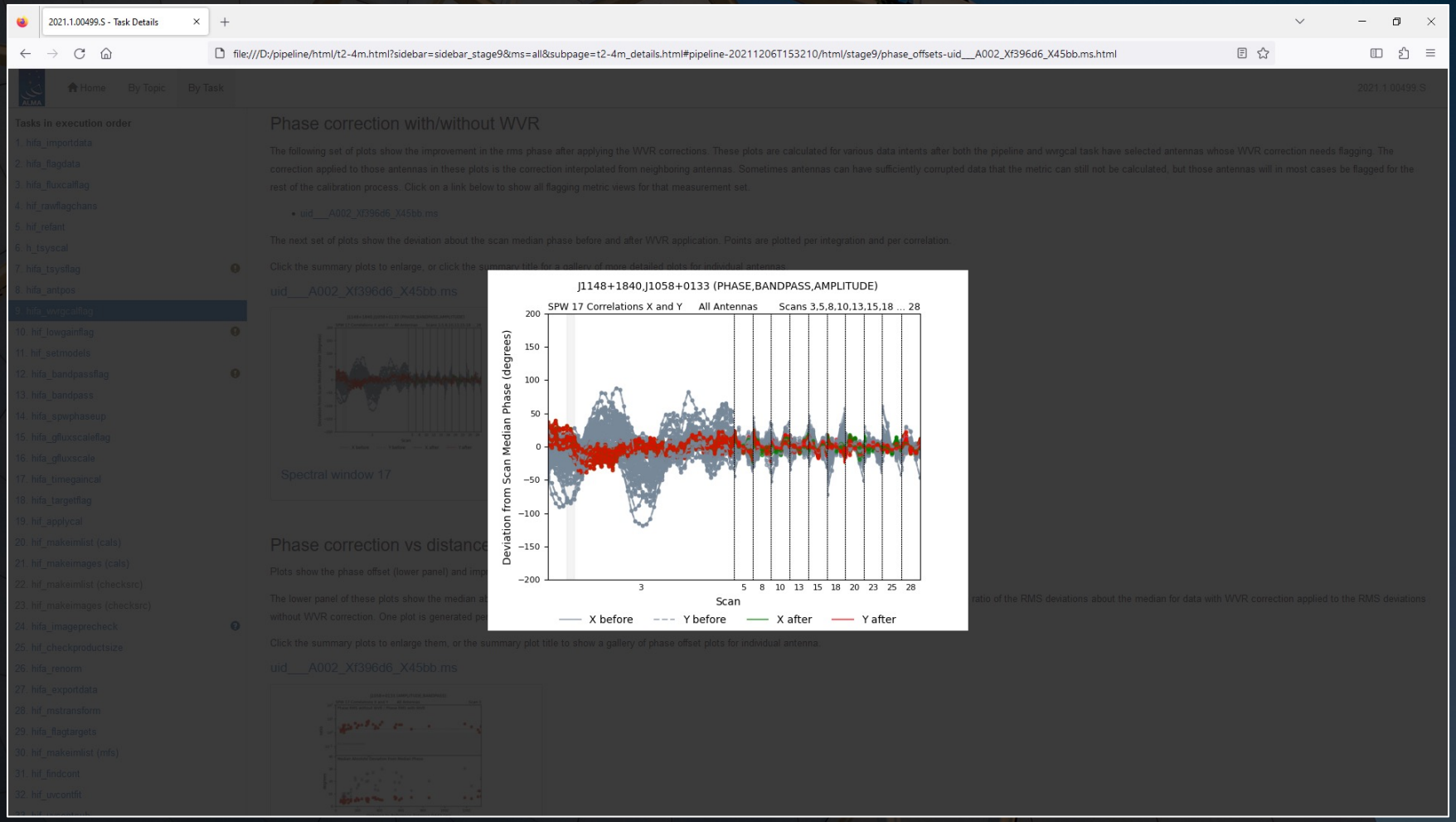
hifa_tsysflag: This step applies flagging to bad T_{sys} data. It is useful to check the plots of T_{sys} versus frequency again to make sure bad data were flagged but good data were not. (Data covering atmospheric features should not necessarily be flagged here.)



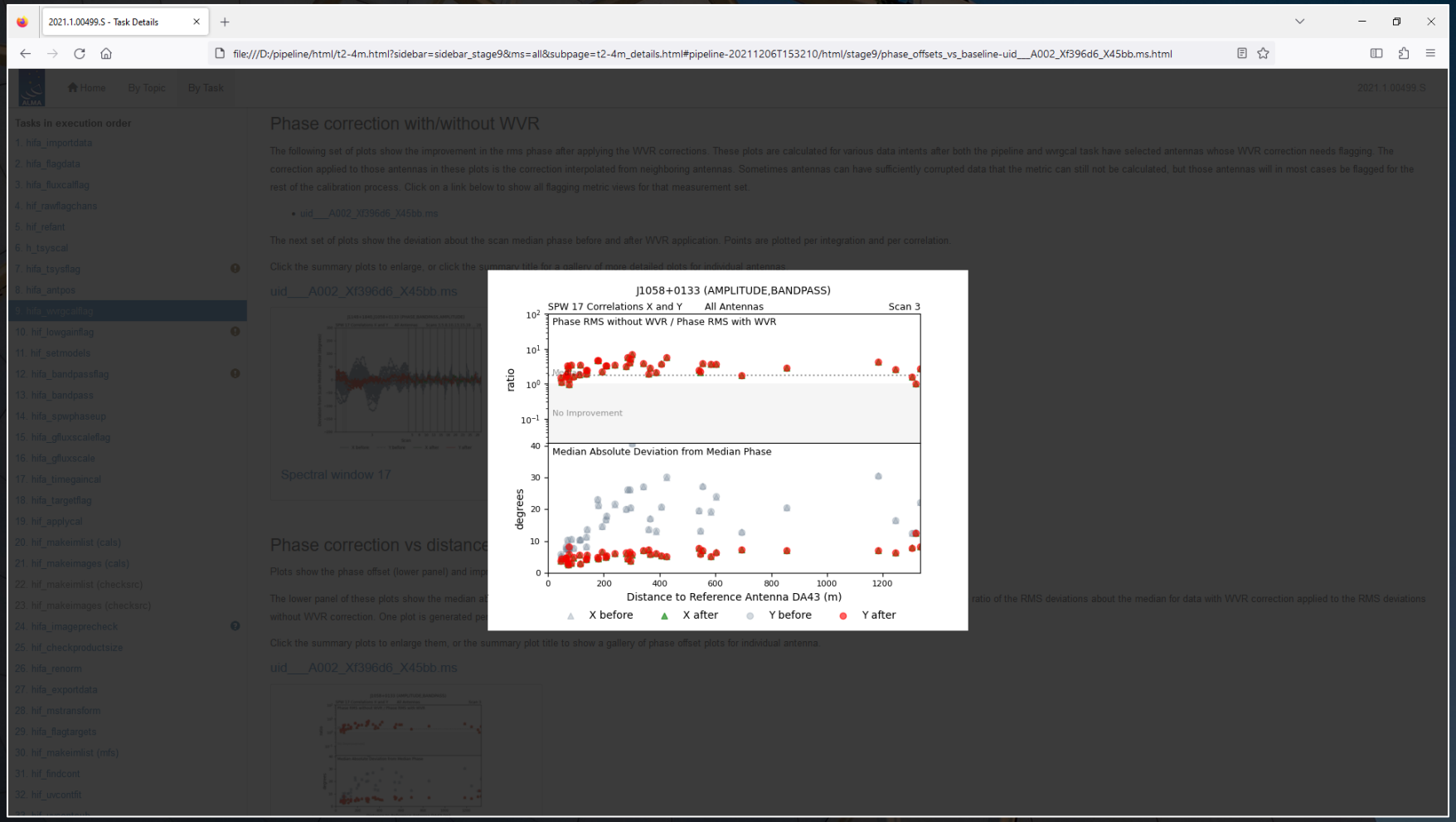
hifa_wvrgcalflag: In this step, an a priori phase correction based on measurements from water vapour radiometers is derived. The plots of the data before and after the application of the corrections should be checked to ensure that the corrections improve the data.



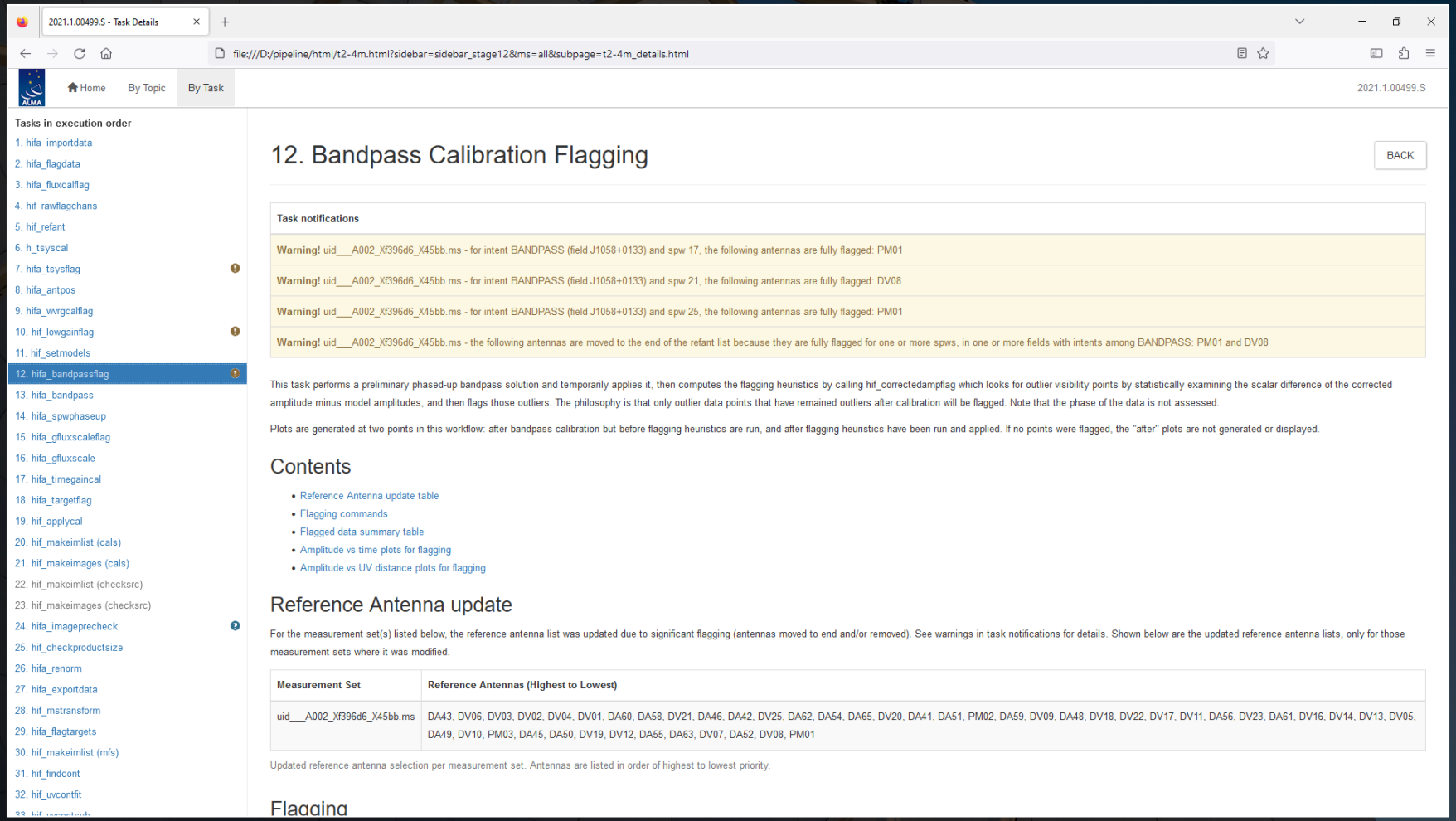
hifa_wvrgcalflag: In this step, an a priori phase correction based on measurements from water vapour radiometers is derived. The plots of the data before and after the application of the corrections should be checked to ensure that the corrections improve the data.



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.



hifa_bandpassflag: This is a step to identify data with aberrant amplitudes before deriving corrections for the phase and amplitude versus frequency. It is useful to check the output from this step to ensure that statistical outliers are removed in the “after flagging” images.



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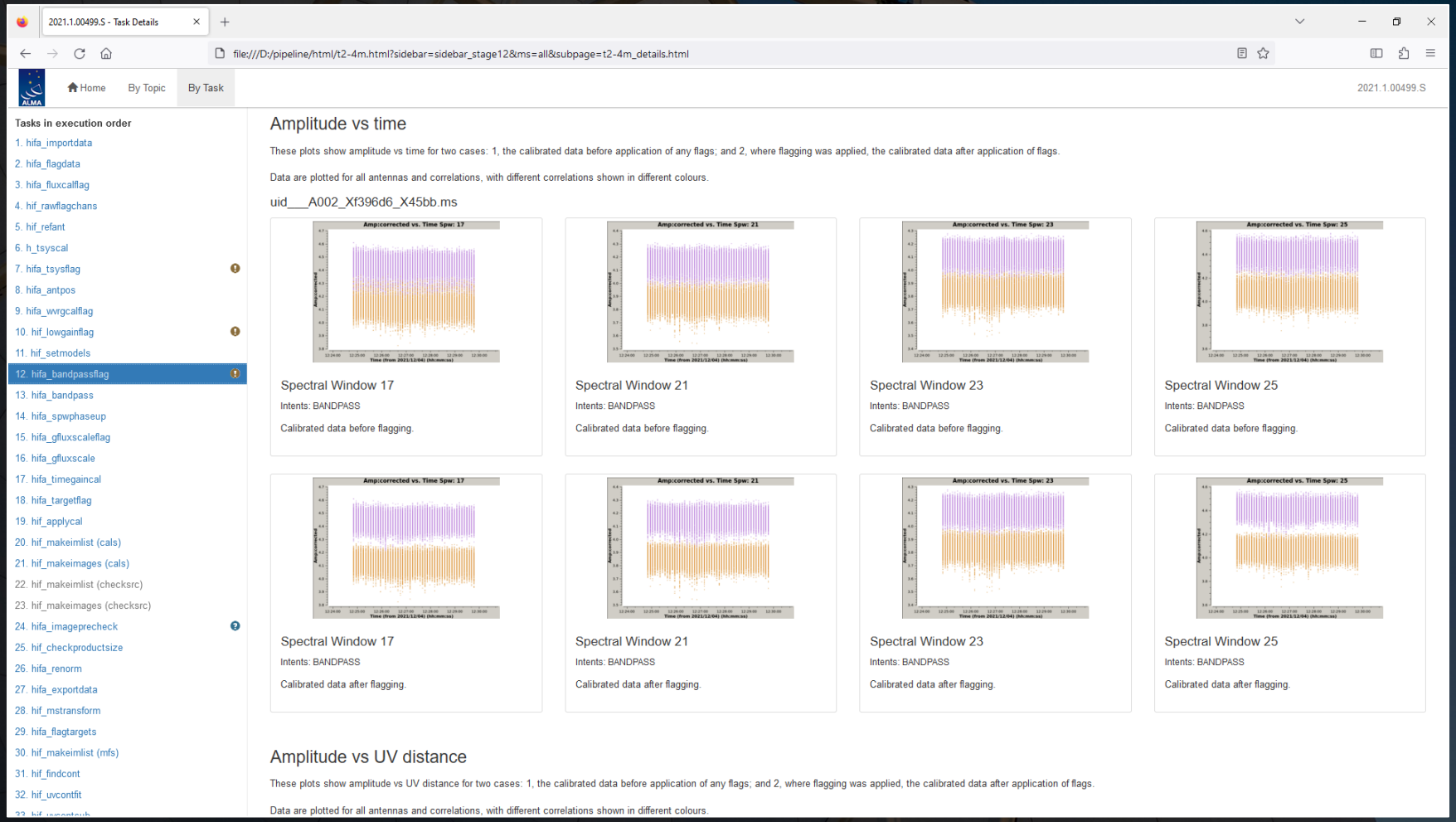
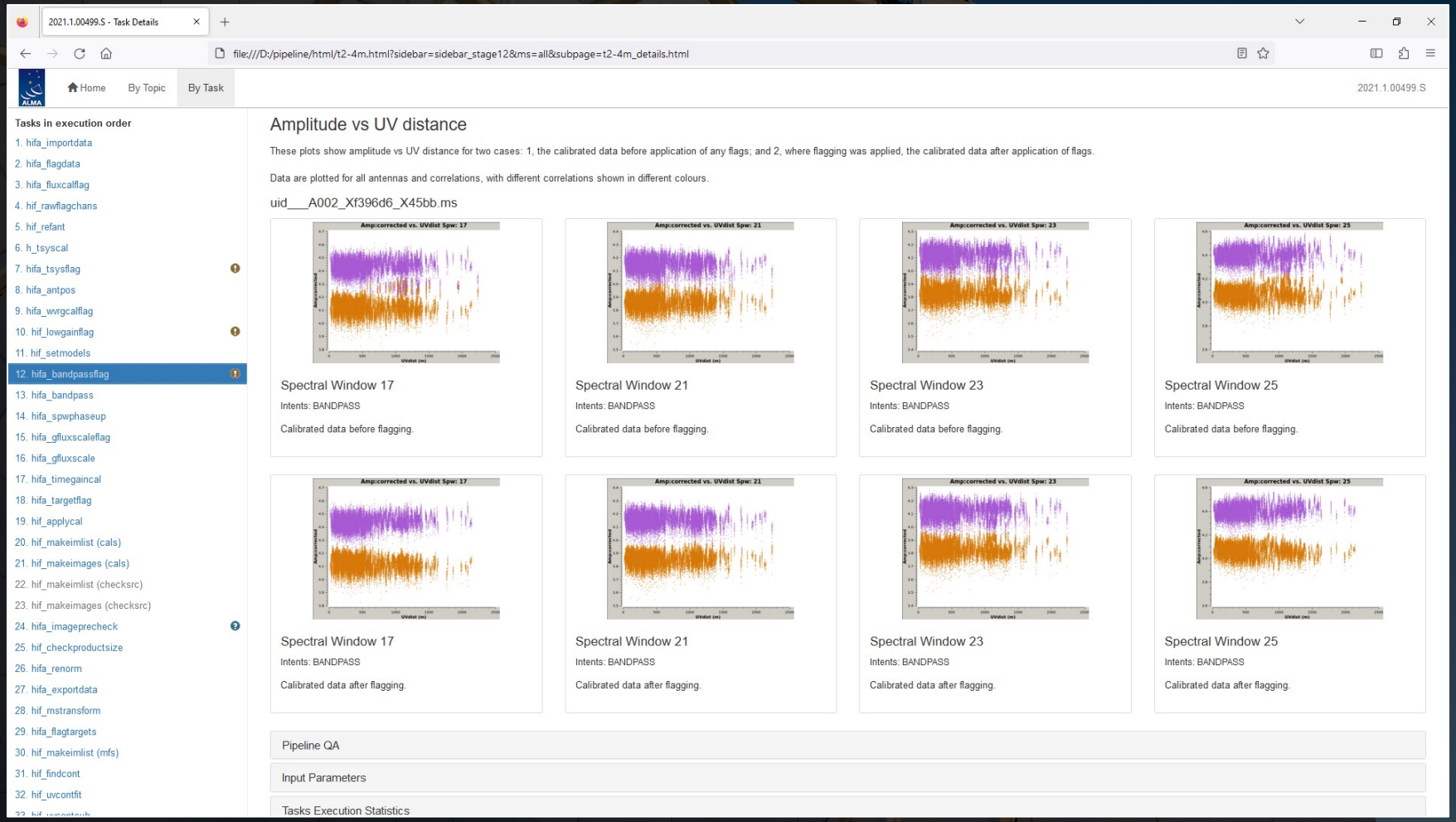
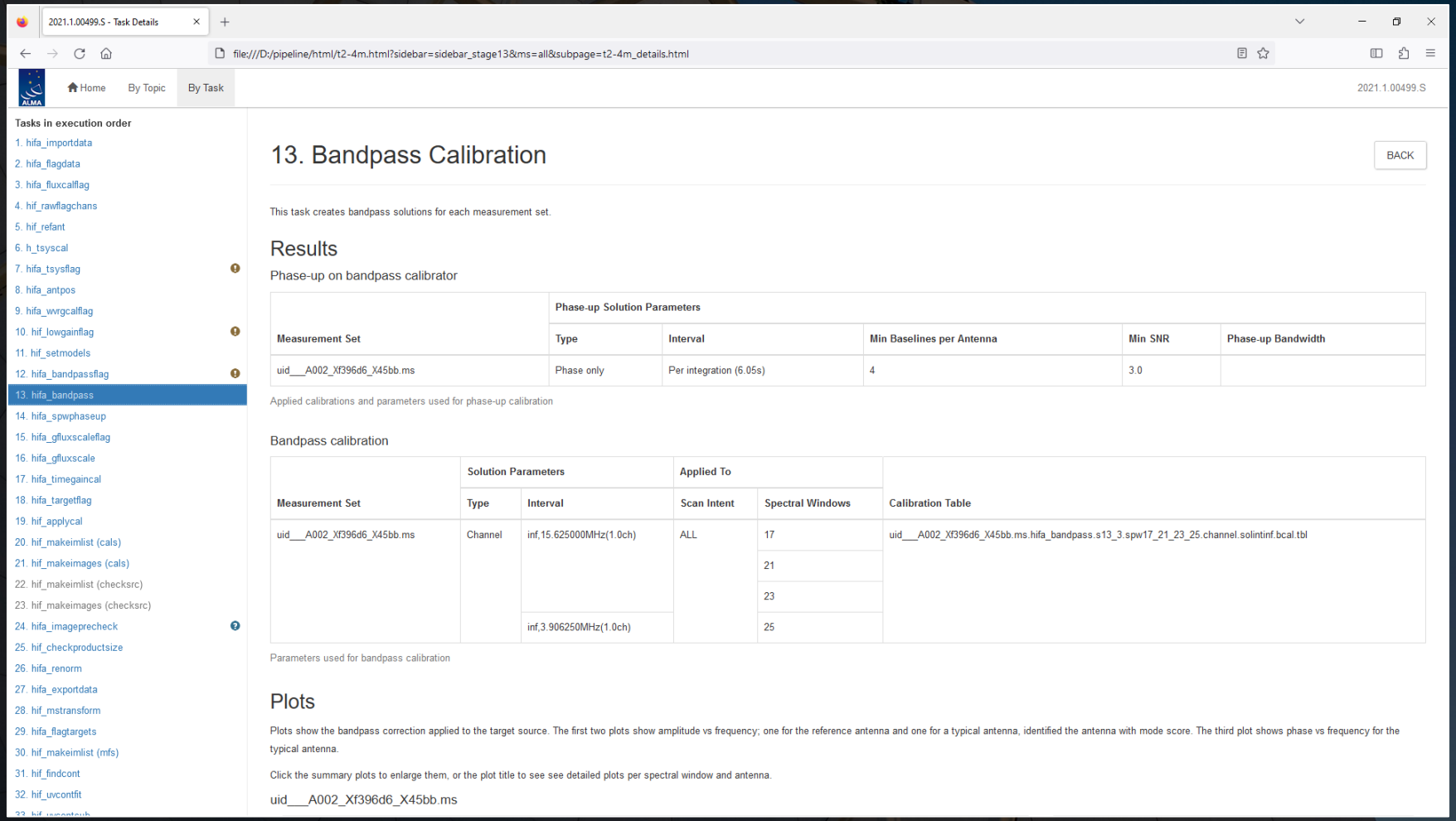


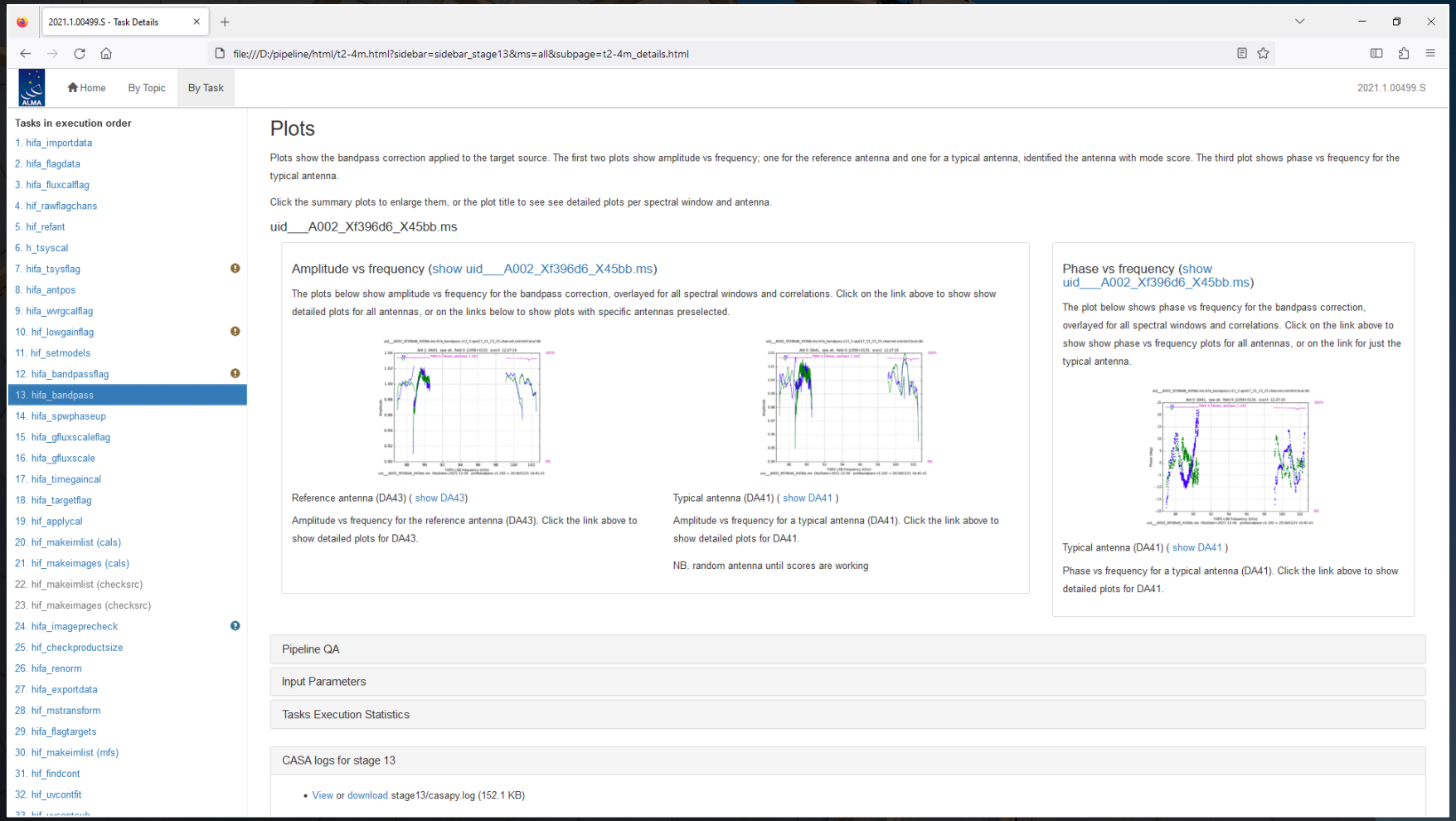
hifa_bandpassflag: This is a step to identify data with aberrant amplitudes before deriving corrections for the phase and amplitude versus frequency. It is useful to check the output from this step to ensure that statistical outliers are removed in the “after flagging” images.



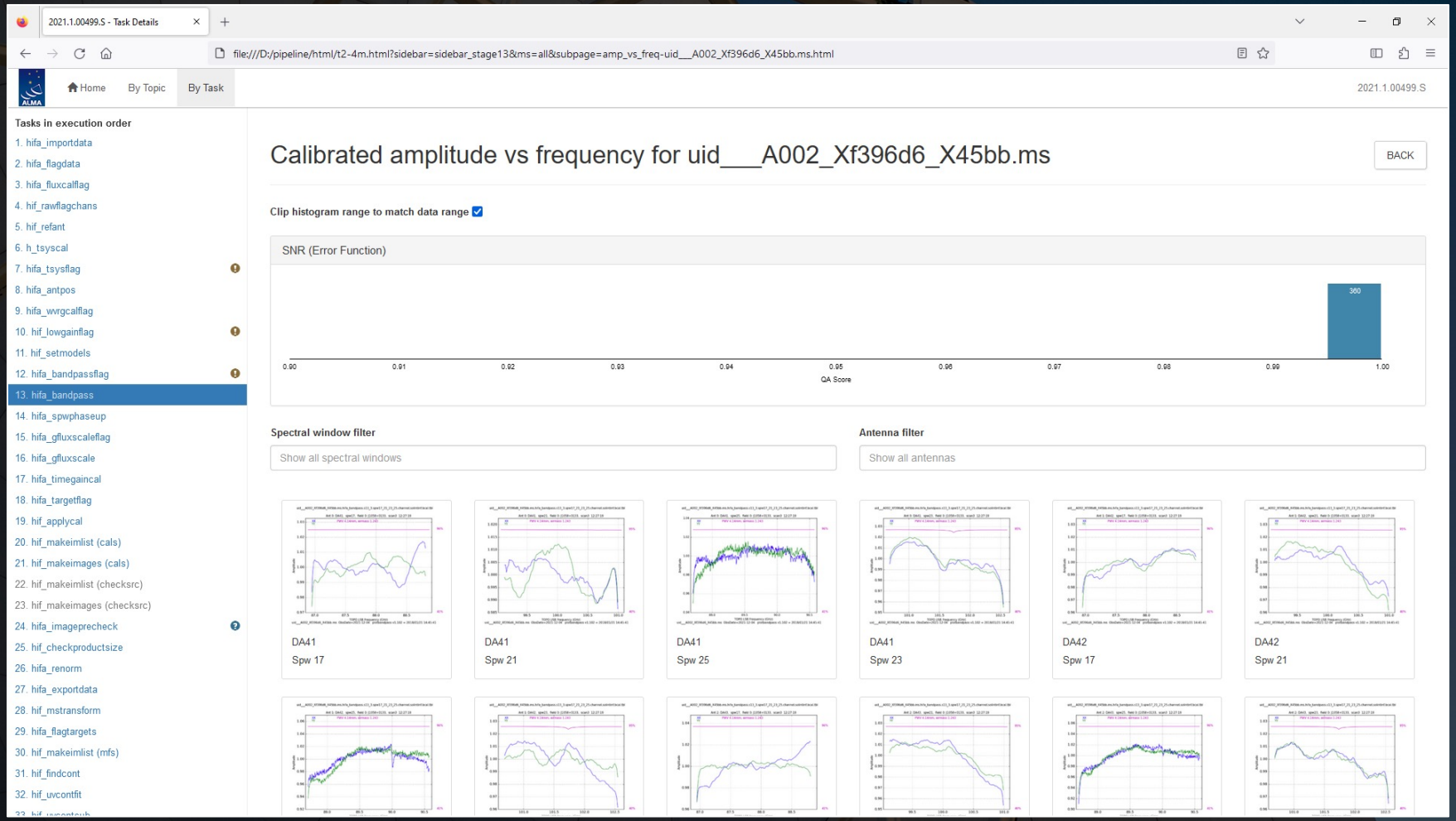
hifa_bandpass: Corrections for the phase and amplitude versus frequency are derived in this step. The plots of these quantities versus frequency should be smooth. Otherwise, it may be necessary to re-calibrate the data.



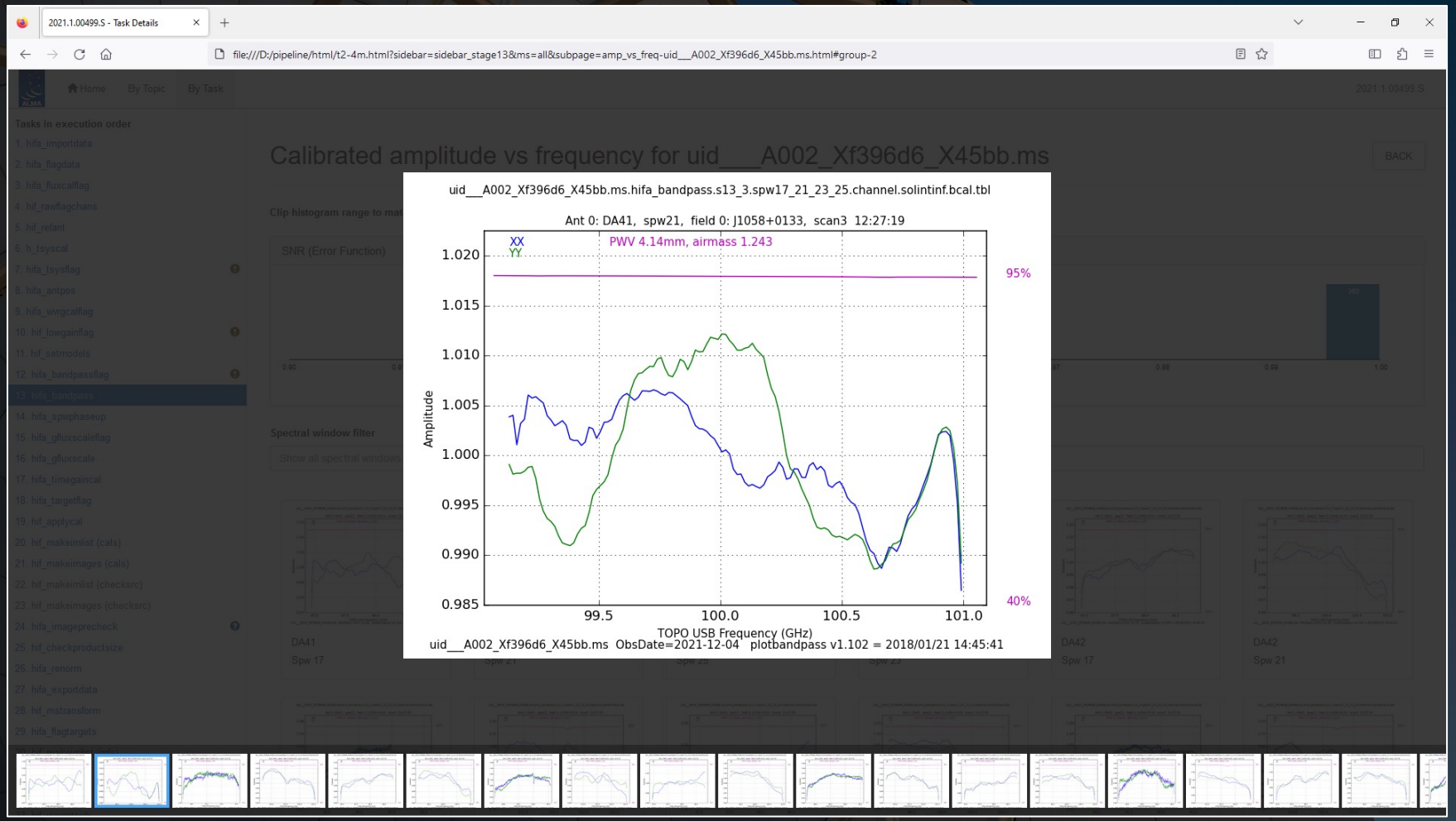
hifa_bandpass: Corrections for the phase and amplitude versus frequency are derived in this step. The plots of these quantities versus frequency should be smooth. Otherwise, it may be necessary to re-calibrate the data.



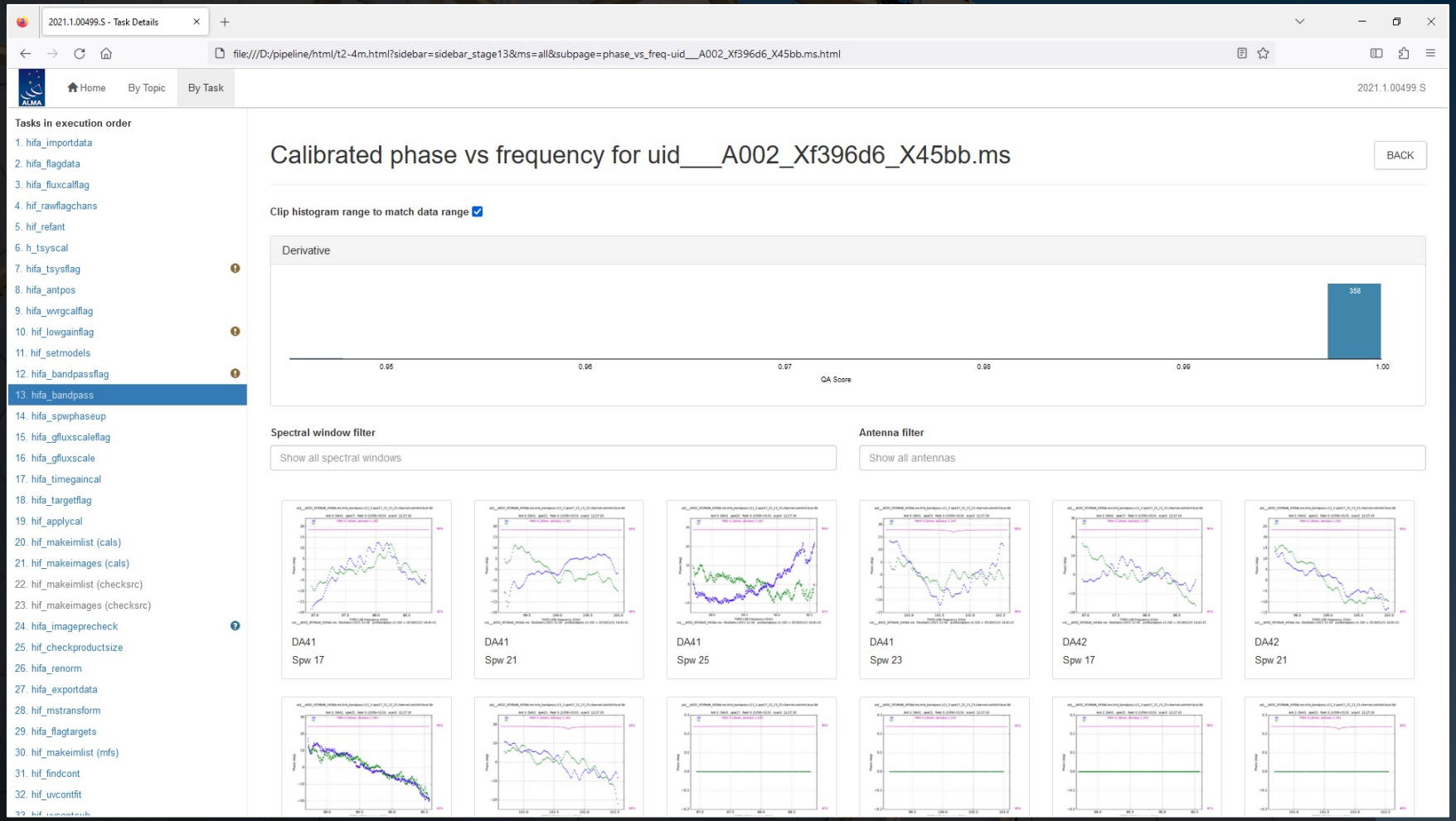
hifa_bandpass: Corrections for the phase and amplitude versus frequency are derived in this step. The plots of these quantities versus frequency should be smooth. Otherwise, it may be necessary to re-calibrate the data.



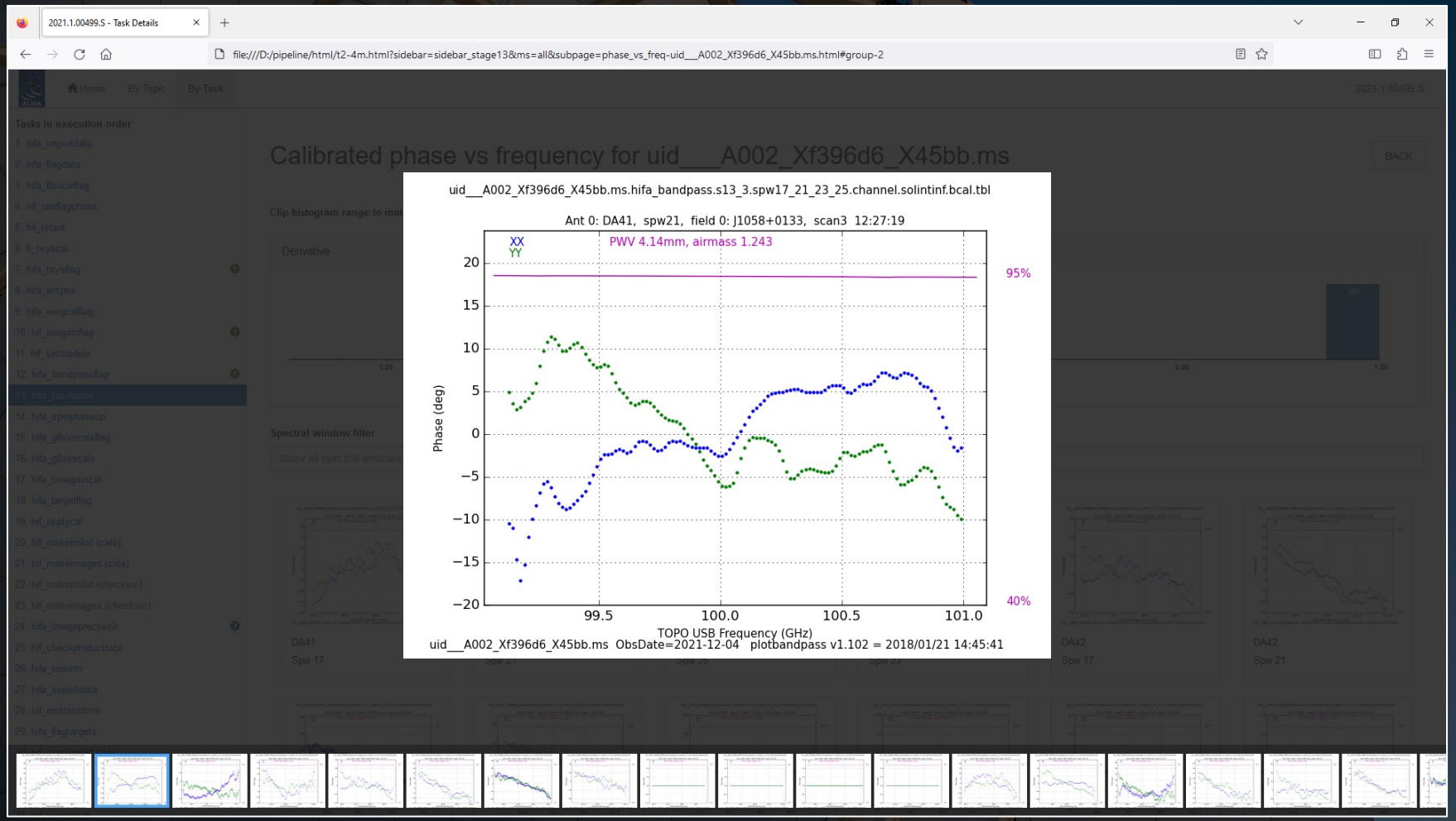
hifa_bandpass: Corrections for the phase and amplitude versus frequency are derived in this step. The plots of these quantities versus frequency should be smooth. Otherwise, it may be necessary to re-calibrate the data.



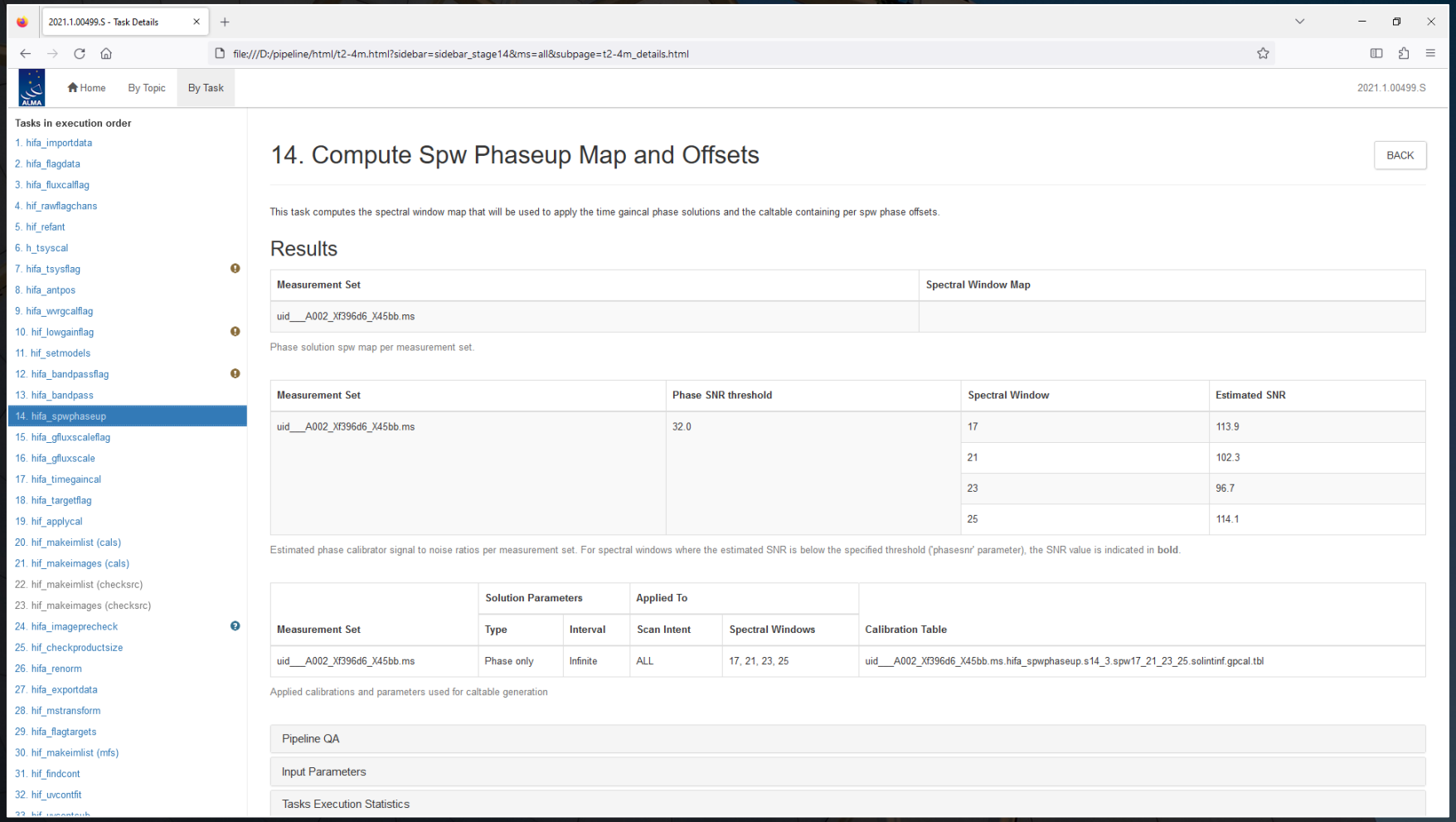
hifa_bandpass: Corrections for the phase and amplitude versus frequency are derived in this step. The plots of these quantities versus frequency should be smooth. Otherwise, it may be necessary to re-calibrate the data.



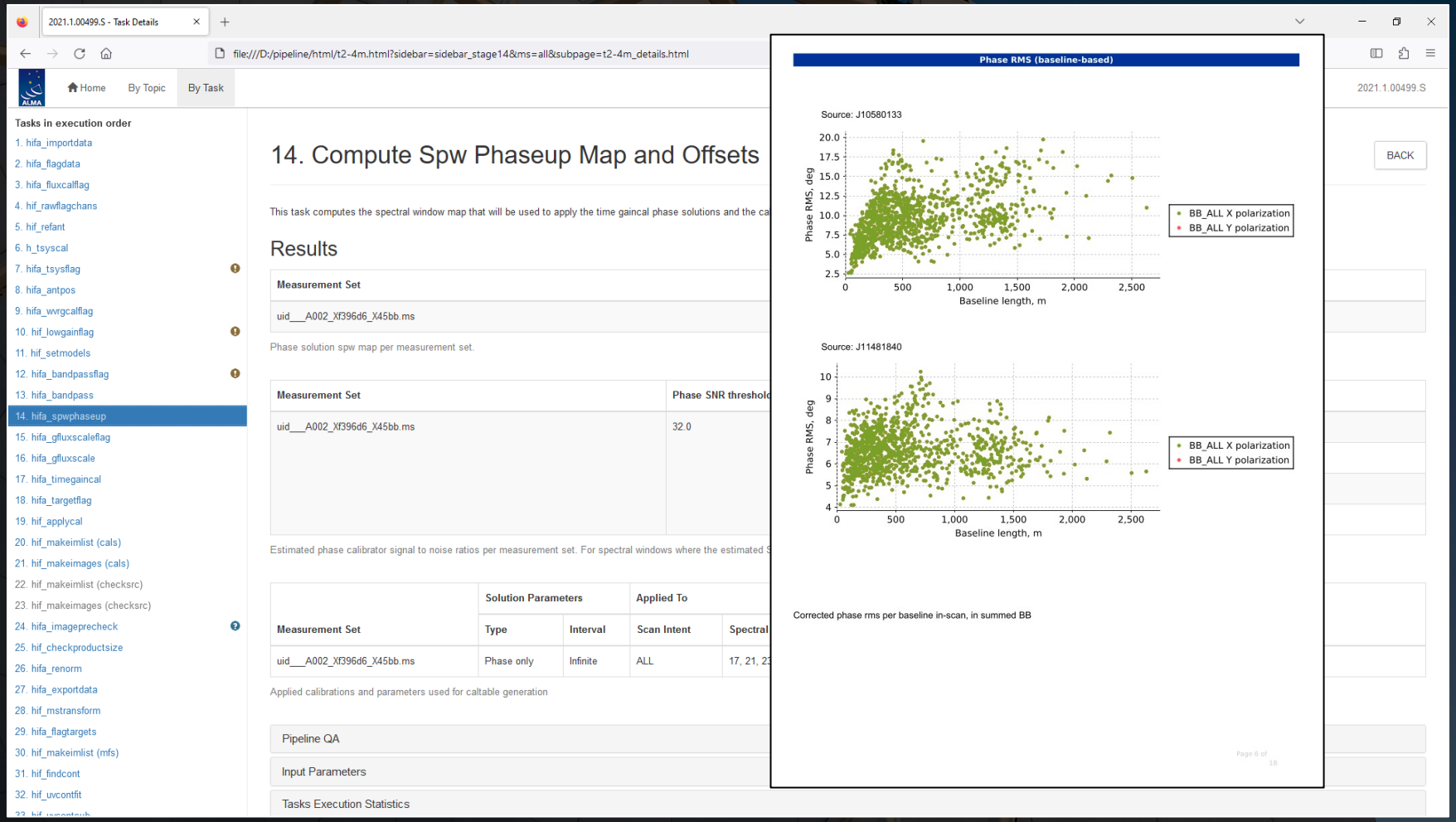
hifa_bandpass: Corrections for the phase and amplitude versus frequency are derived in this step. The plots of these quantities versus frequency should be smooth. Otherwise, it may be necessary to re-calibrate the data.



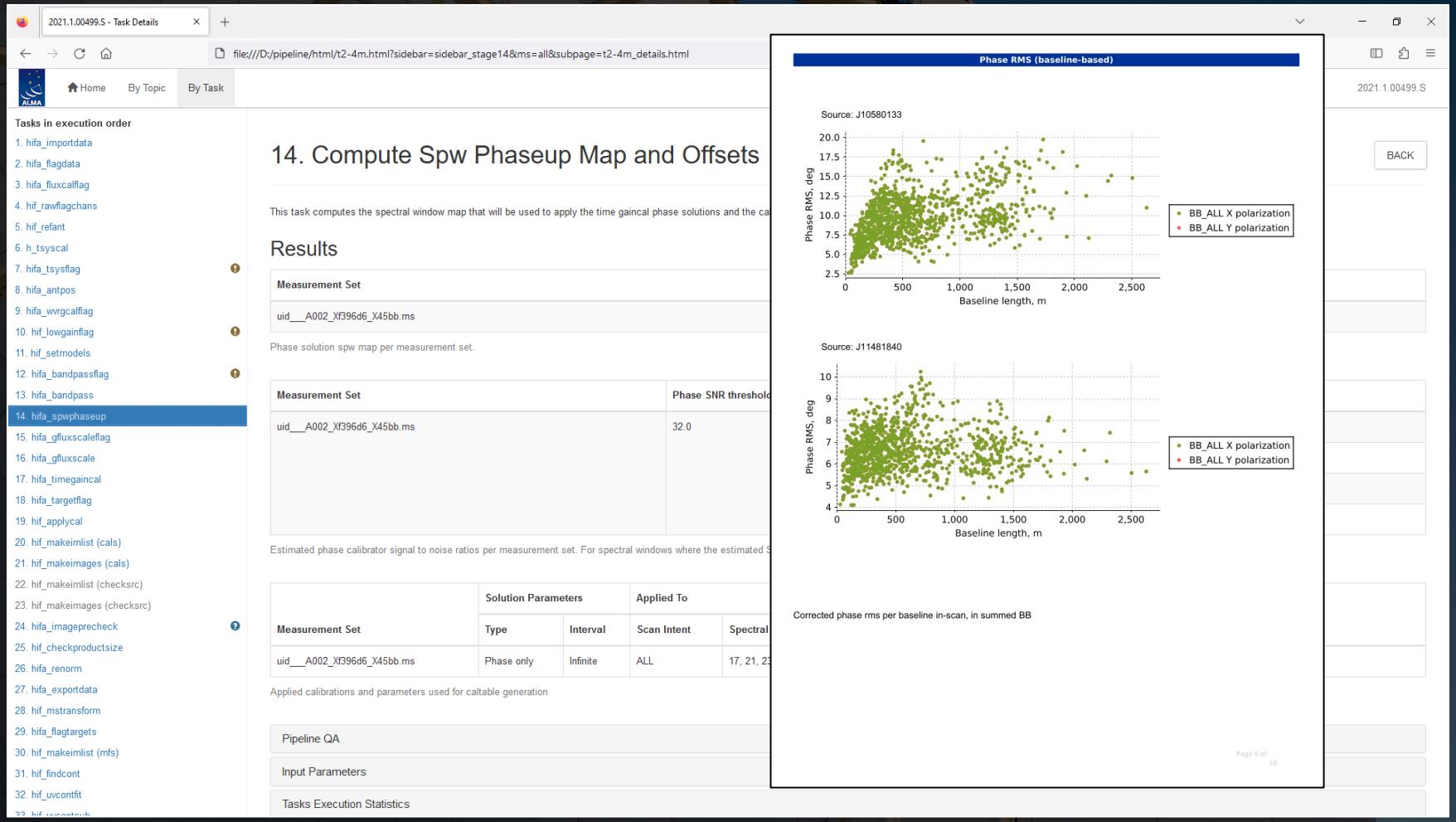
hifa_spwphaseup: From Cycle 9 onwards (but not in the example used here), this step produces diagnostic plots showing the rms noise in the phases as a function of uv distance. They look similar to another set of plots from the QA0 reports.



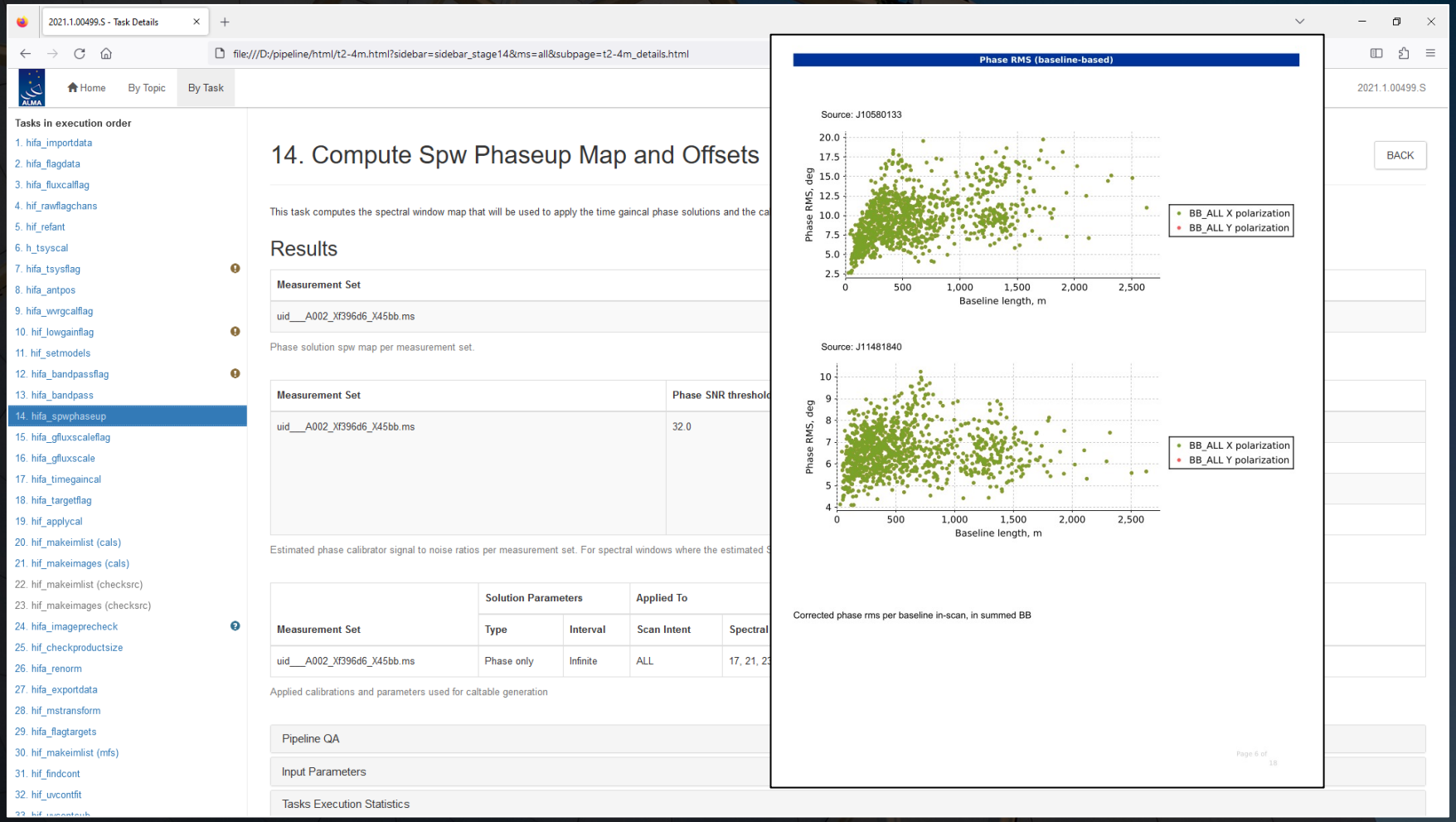
hifa_spwphaseup: From Cycle 9 onwards (but not in the example used here), this step produces diagnostic plots showing the RMS noise in the phases as a function of uv distance. They look similar to another set of plots from the QA0 reports.



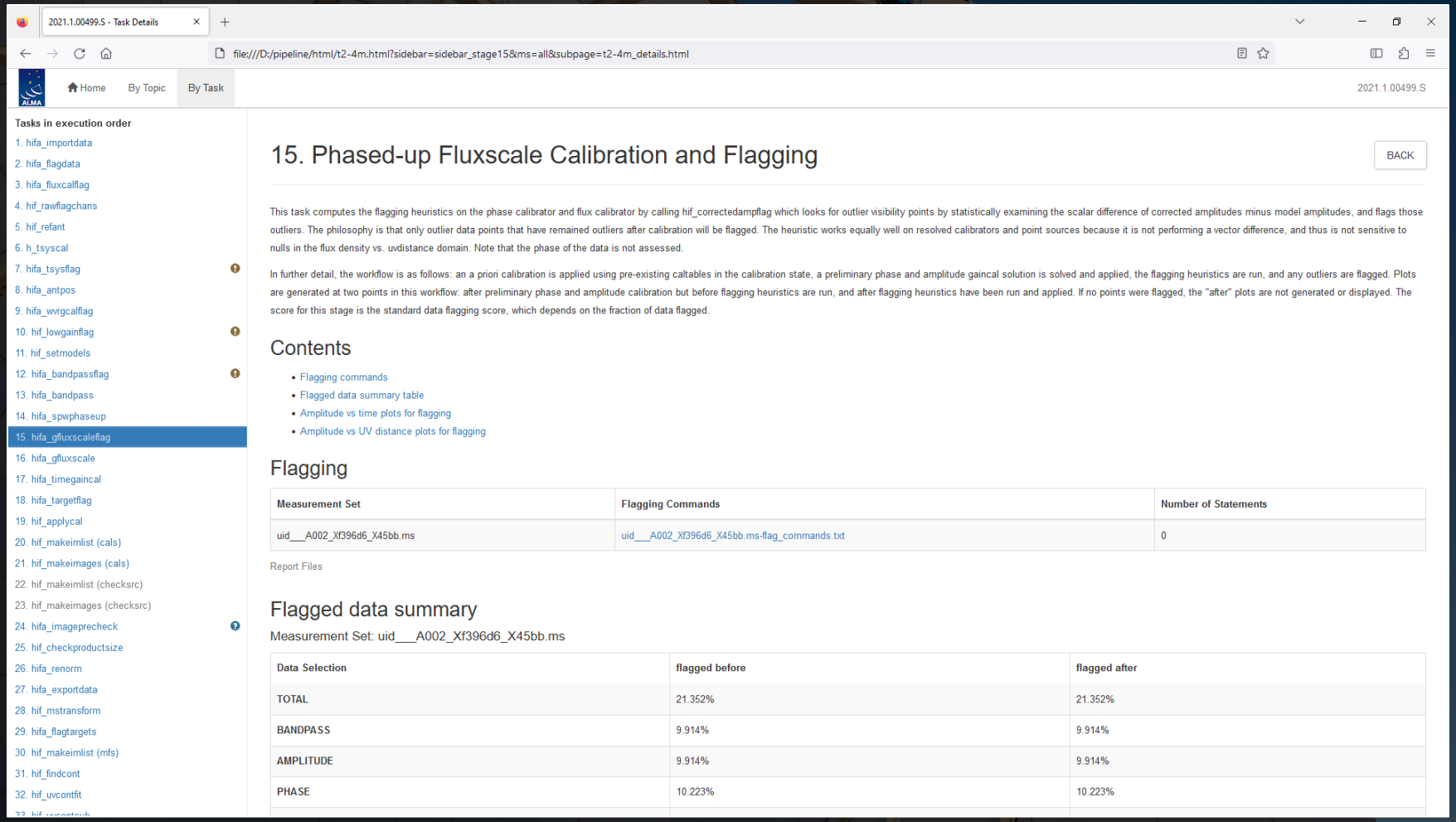
The phase RMS values in these plots should be below 70°, or else the data cannot be calibrated properly. Ideally, the phase RMS values should vary linearly with uv distance, but this is not absolutely necessary.



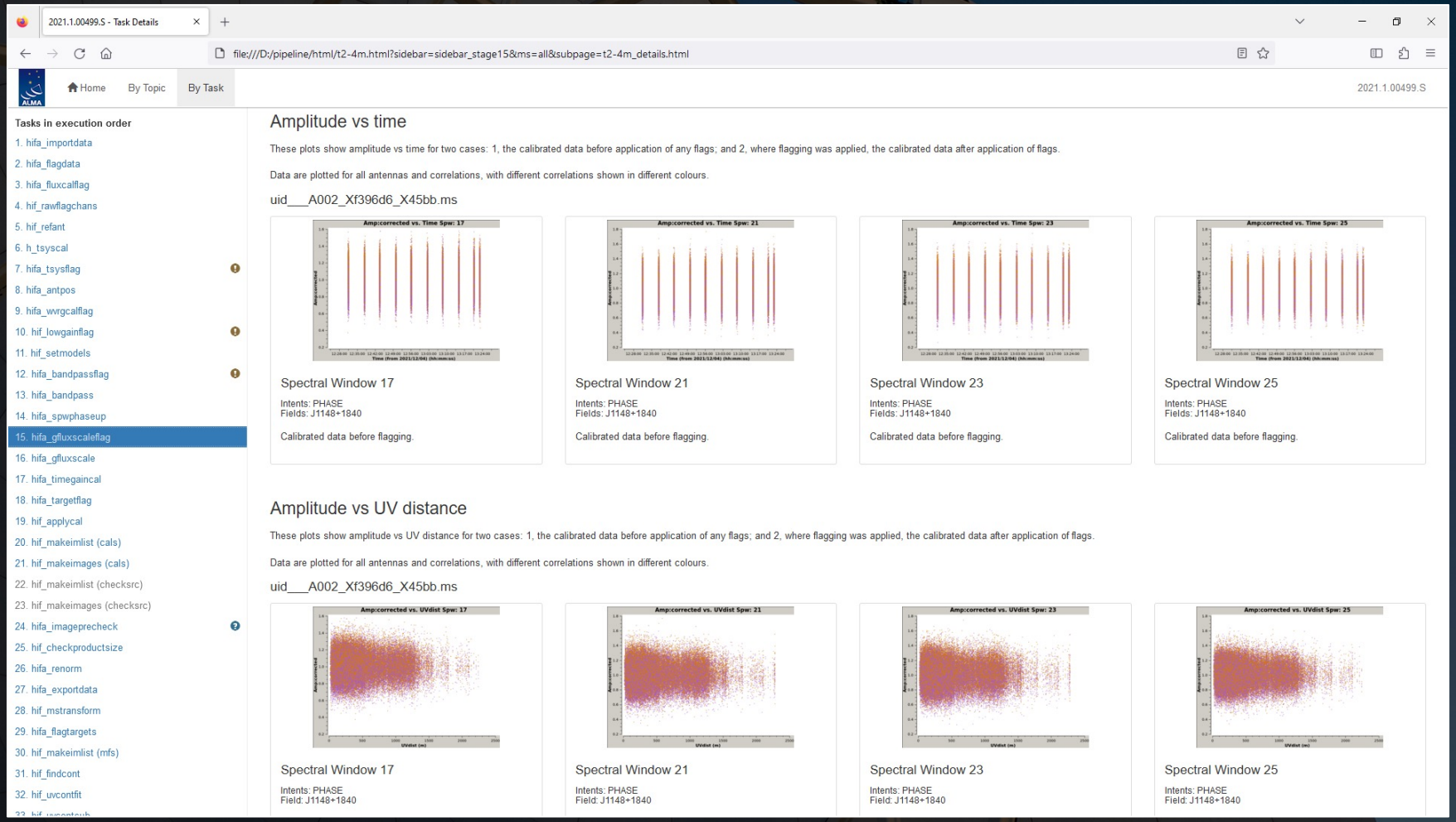
Any noisy or problematic baselines can be identified in the logs accessible from the bottom of the page.



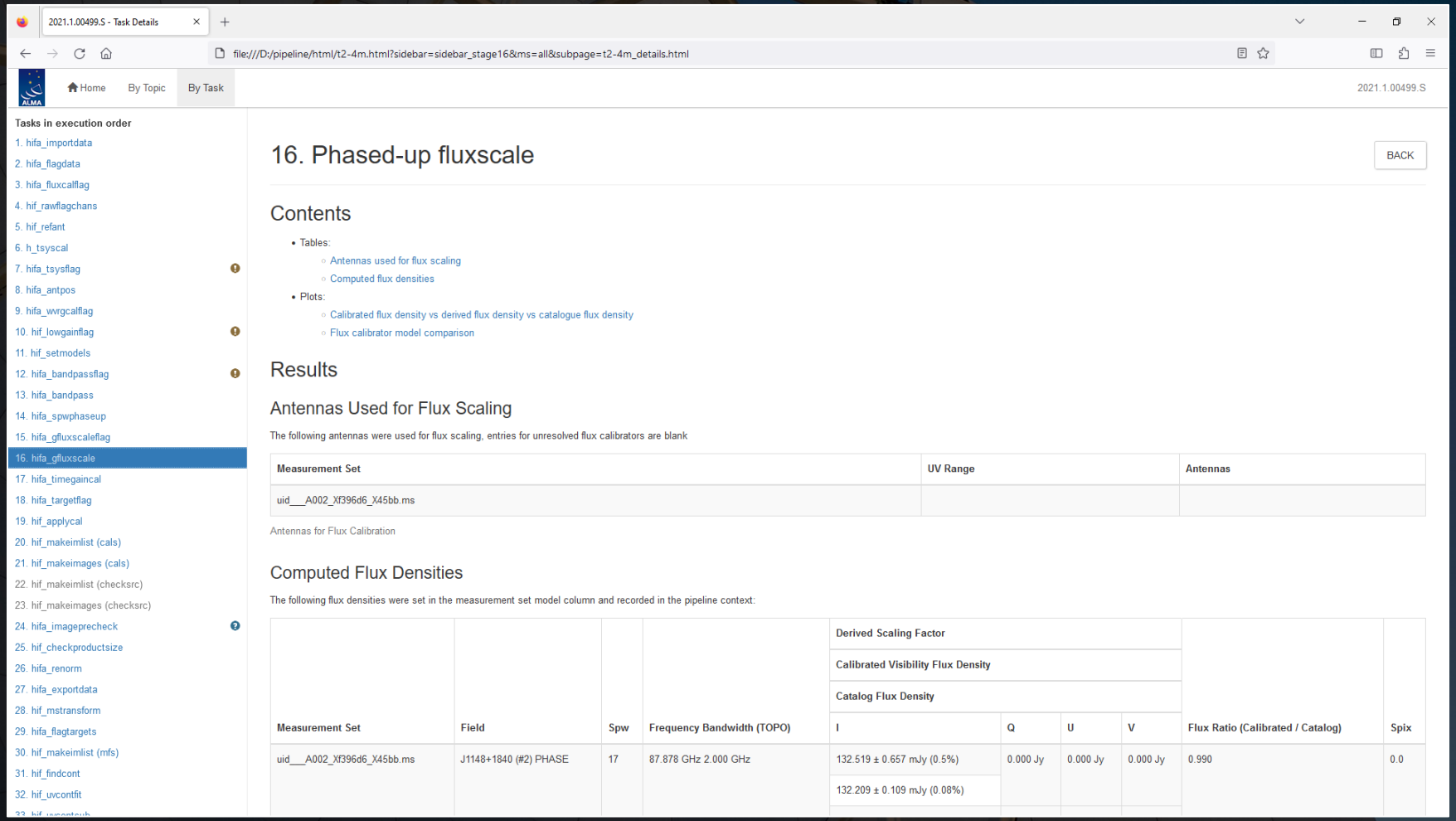
hifa_gfluxscaleflag: Outliers from the hifa_bandpassflag step should be flagged before this step. It is worth checking the plots of amplitude versus time and versus uv distance, which are now shown for the phase calibrator (and other calibrators when they are present).



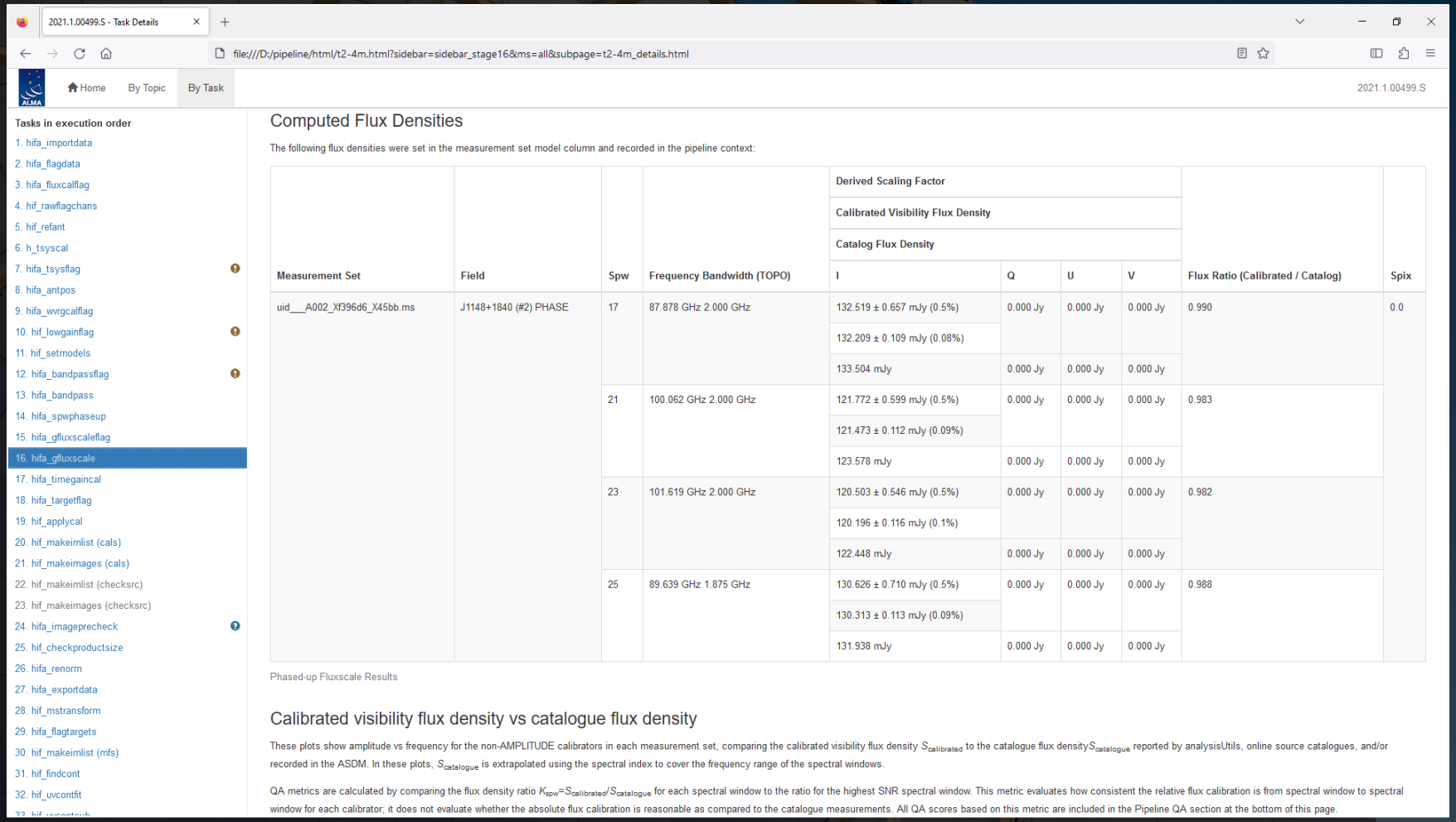
hifa_gfluxscaleflag: Outliers from the hifa_bandpassflag step should be flagged before this step. It is worth checking the plots of amplitude versus time and versus uv distance, which are now shown for the phase calibrator (and other calibrators when they are present).



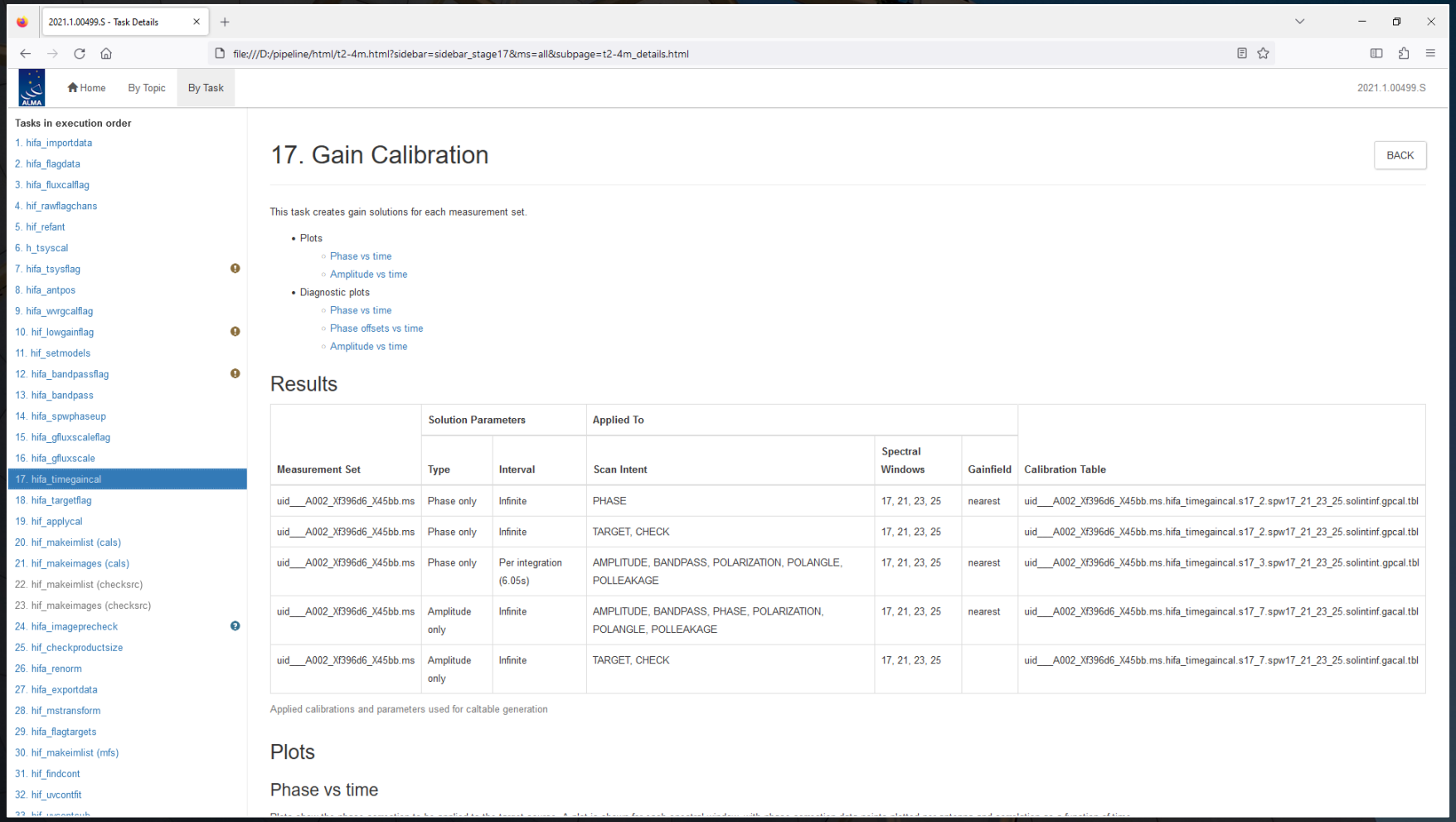
hifa_gfluxscale: The fluxes for the calibration sources (except the flux calibrator source itself) are compared to the values from the calibrator archive here.



These numbers should be close, but only if the two sets of numbers are from similar dates (within 30 days of each other). The phase calibrators vary in brightness over time, so the catalog values often do not measure the derived values.



hifa_timegaincal: This module derives phase and amplitude corrections versus time. The various plots should be inspected for outliers, which may need to be flagged before imaging.



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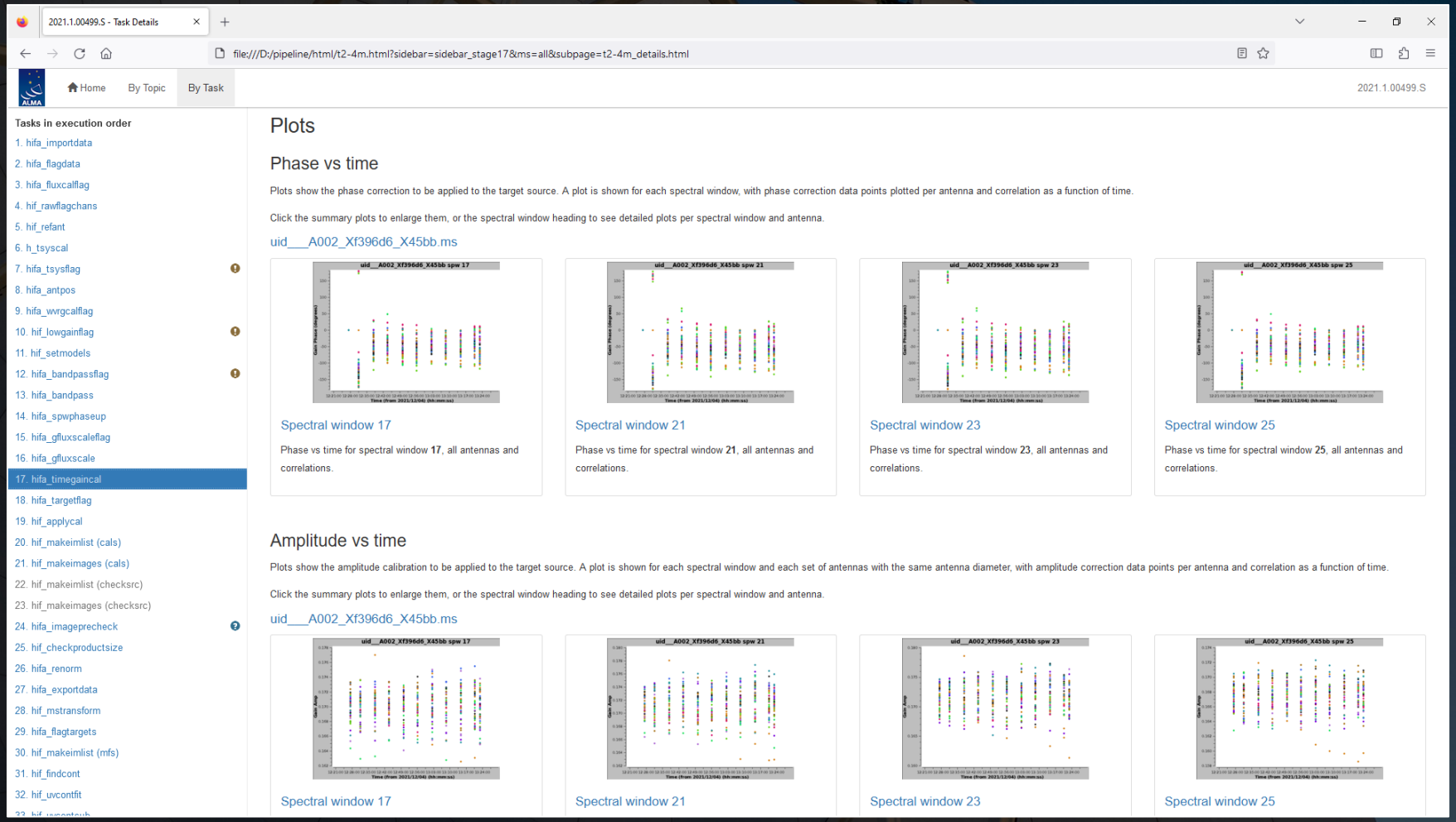
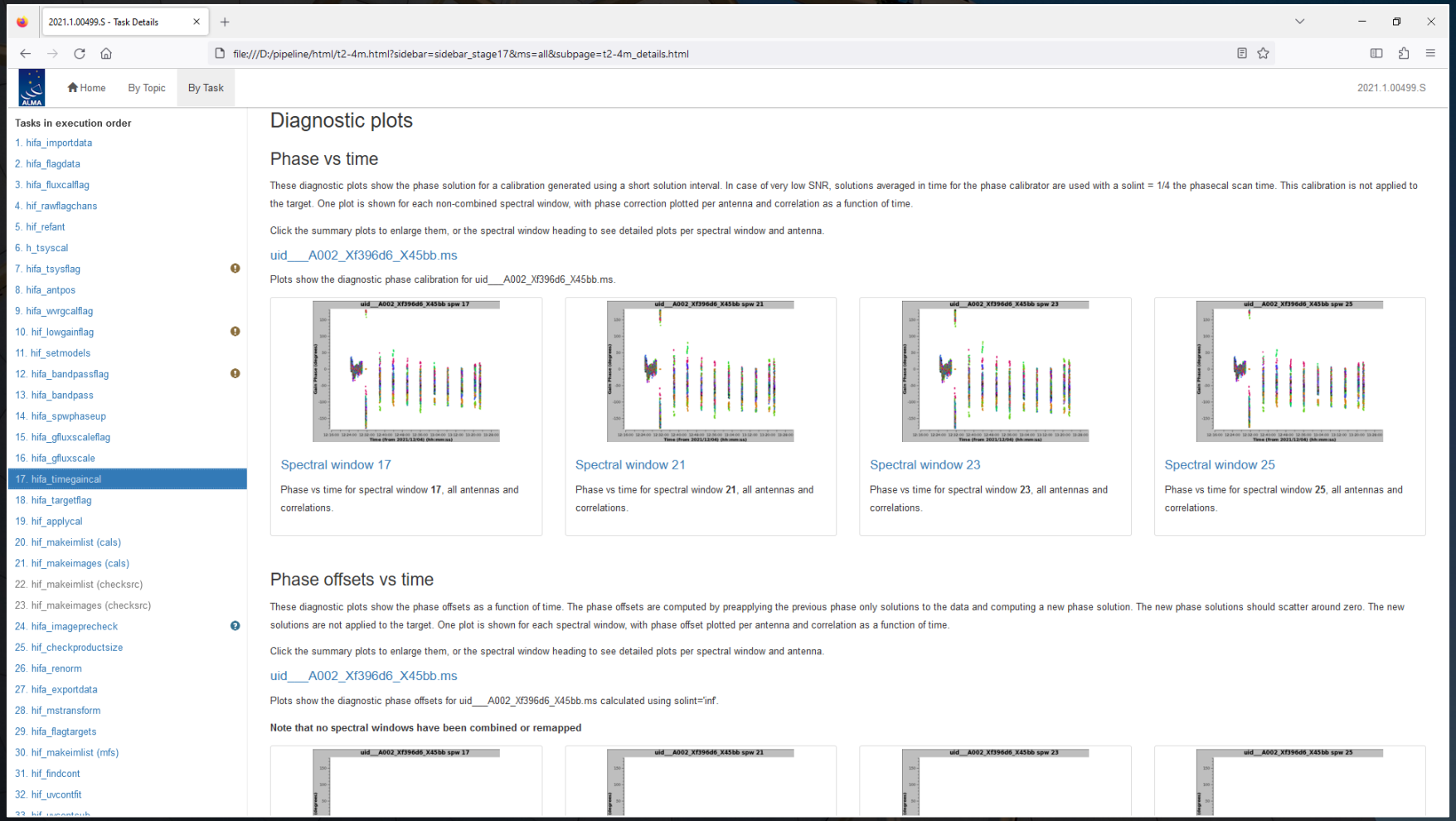
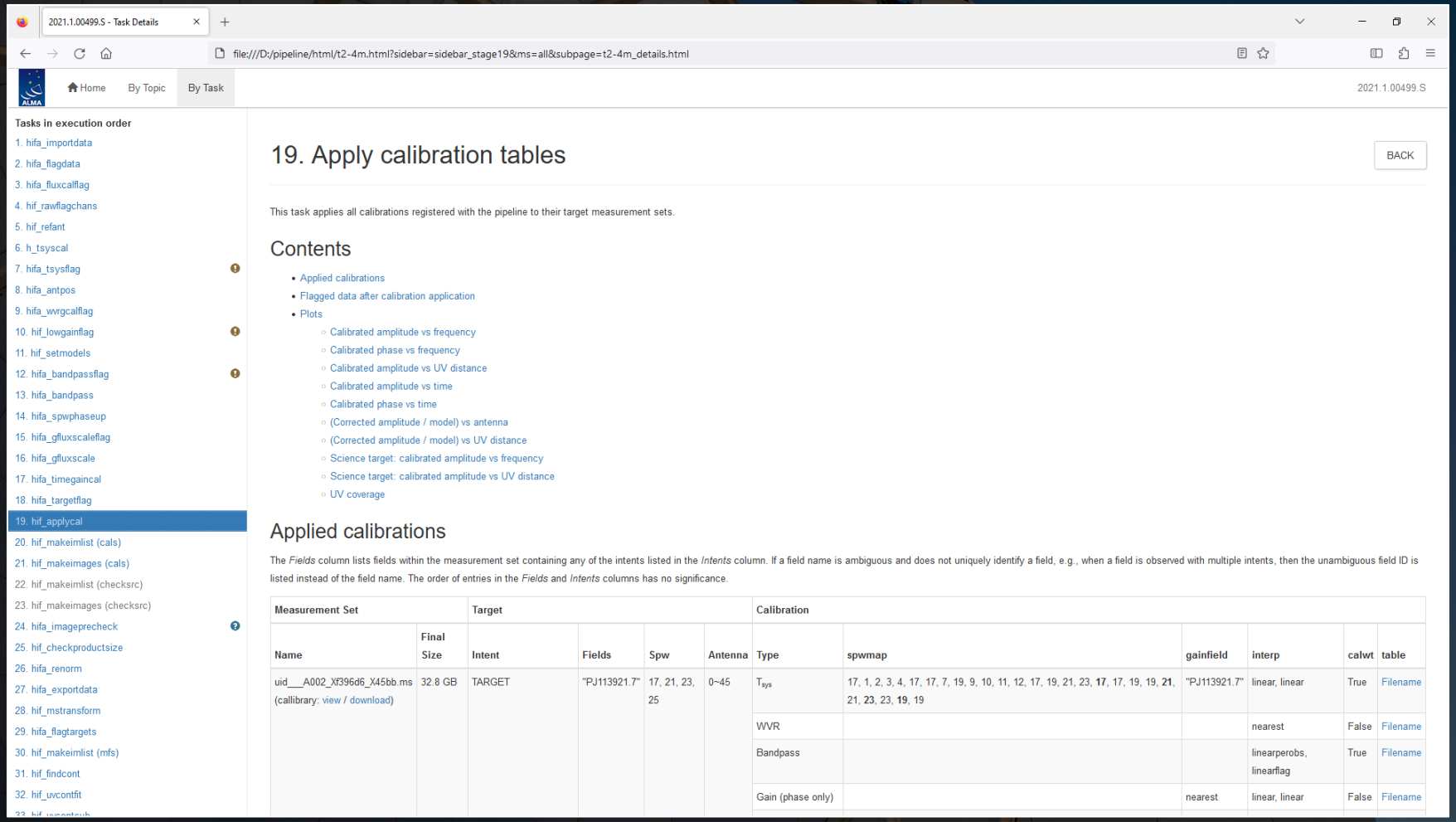


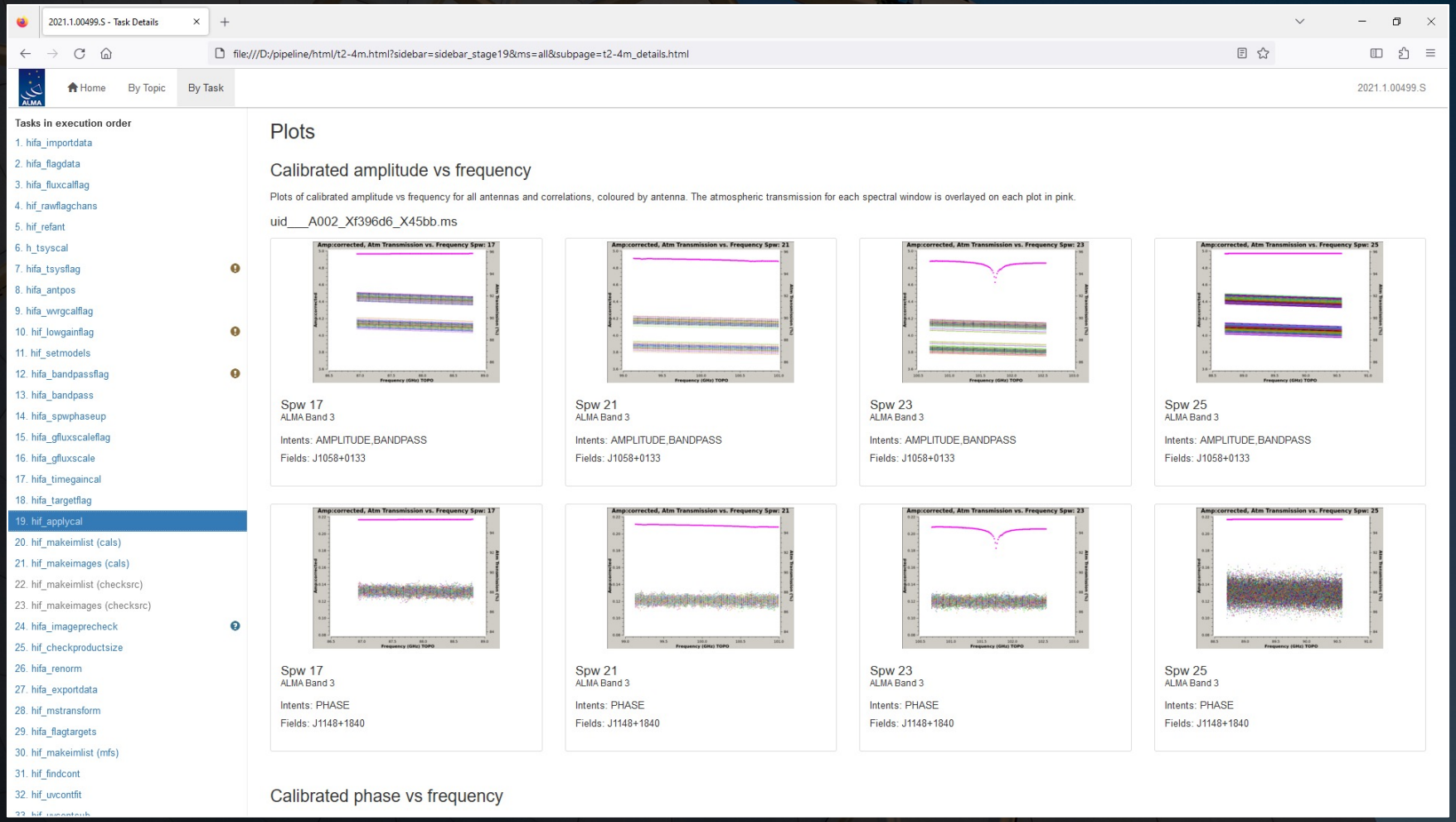
hifa_timegaincal: This module derives phase and amplitude corrections versus time. The various plots should be inspected for outliers, which may need to be flagged before imaging.



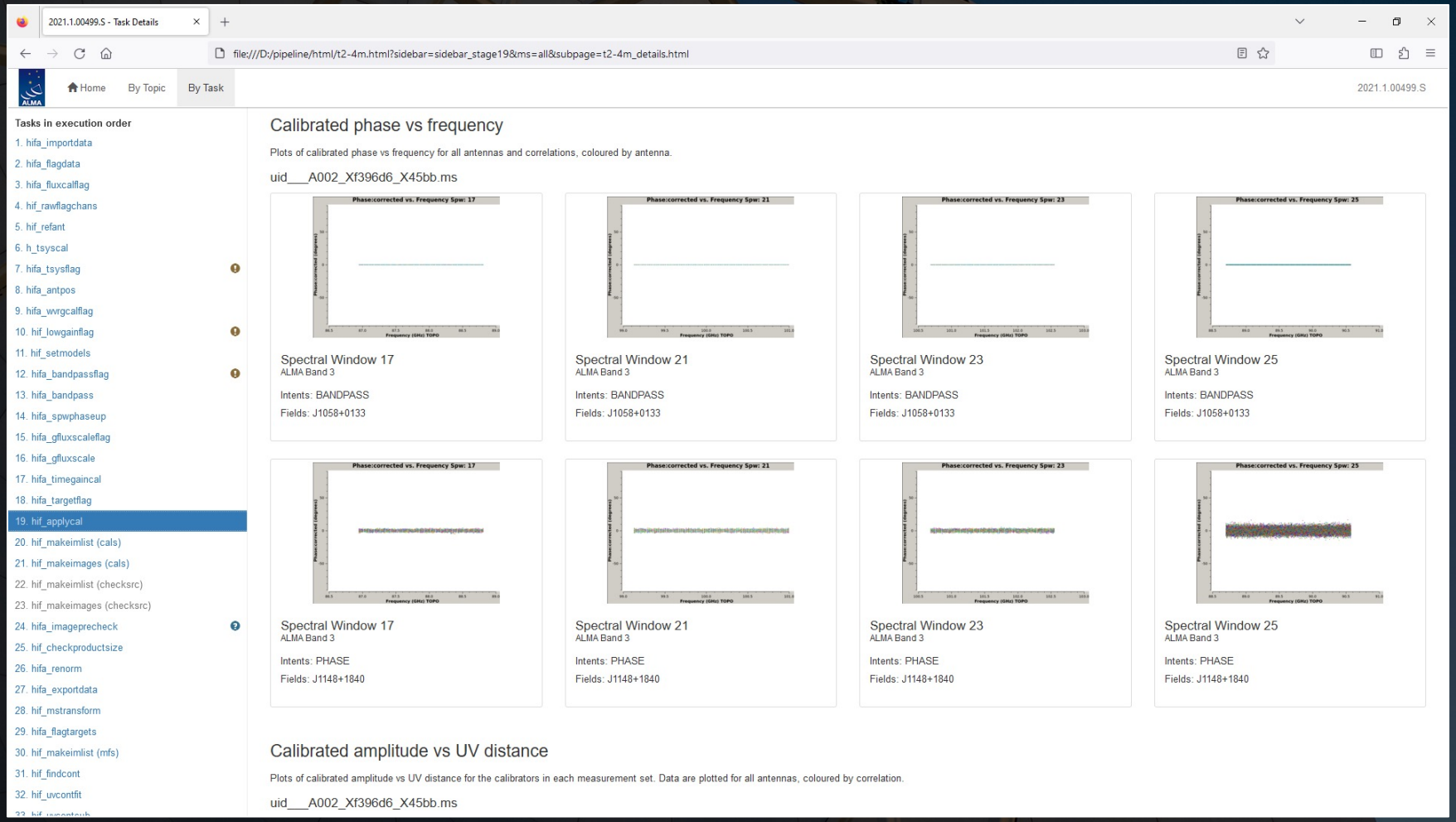
hifa_applycal: This step applies the calibration tables and created plots of the phases and amplitudes afterwards. Any unexpected outliers in these plots will need to be identified and flagged.



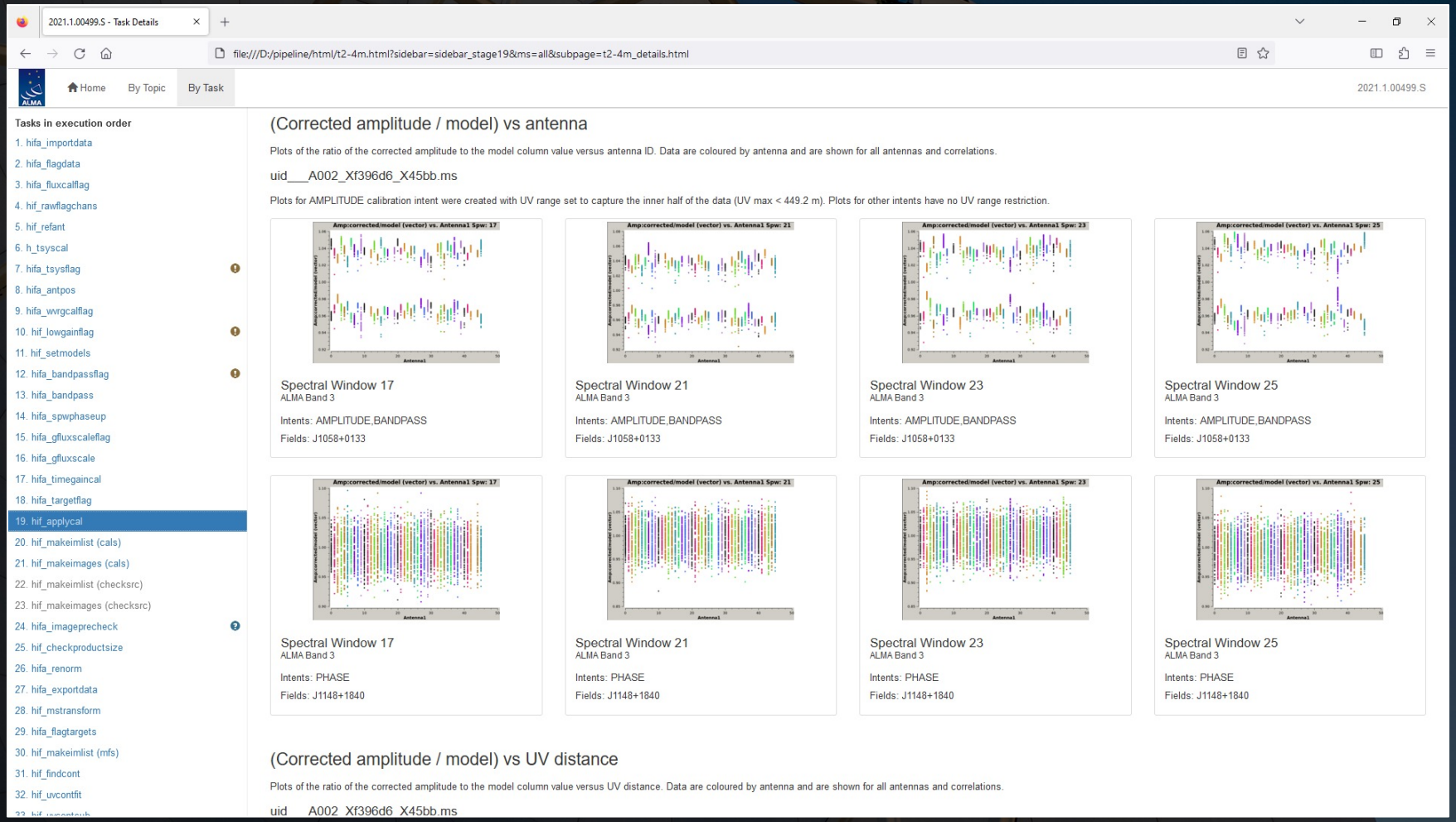
The amplitudes versus frequency, versus uv distance, and versus time should be mostly flat for the calibration sources (but not necessarily for science targets or planetary objects). However, the scatter in the amplitudes may increase where atmospheric transmission decreases.



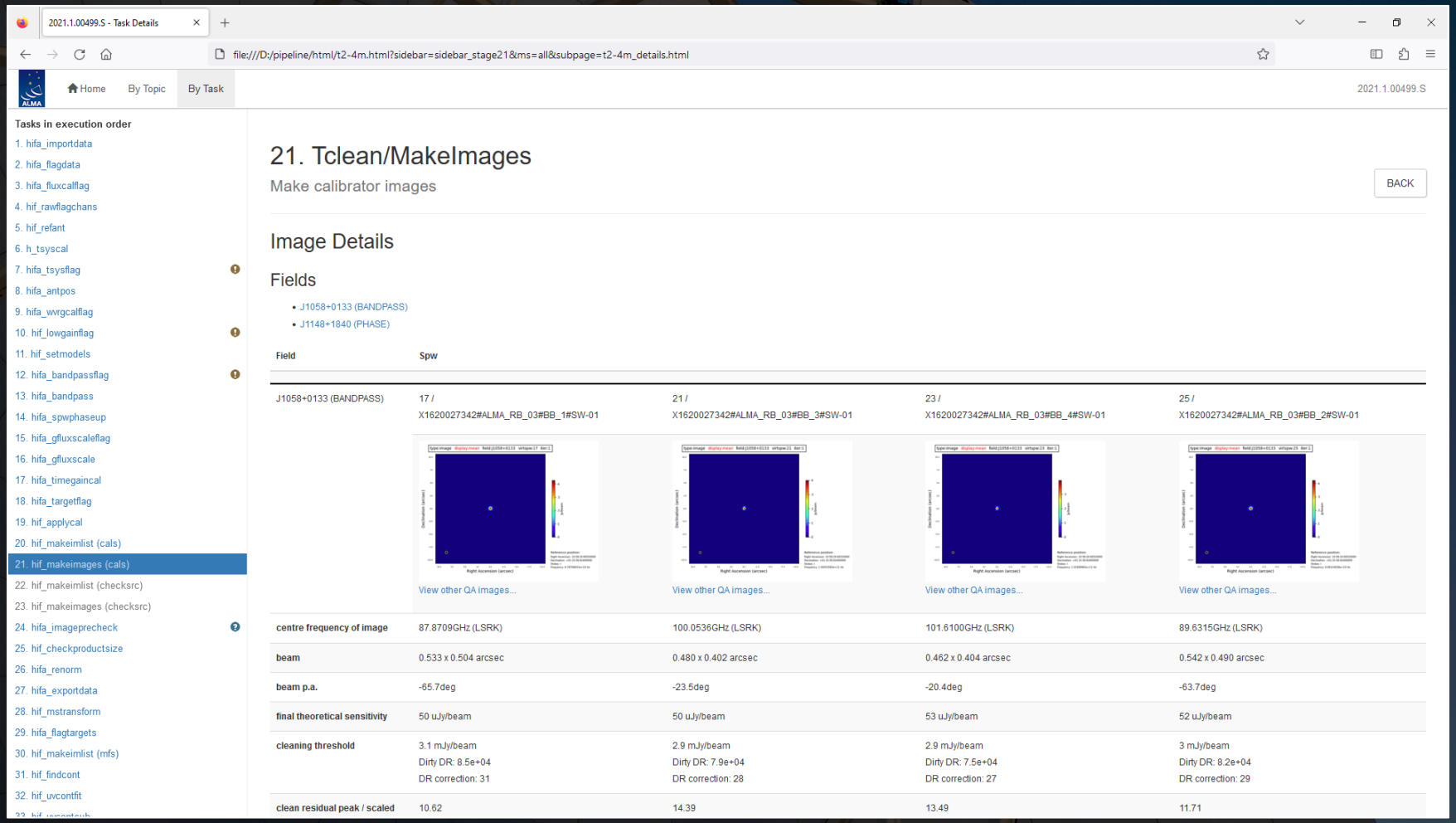
The phases for the calibration sources should be equivalent to 0.



This module also produces plots of the amplitude/model flux ratios versus antenna and uv distance. These should be close to 1 (or the average of the data from the XX and YY receivers should be 1).



hif_makeimages (cals): 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.



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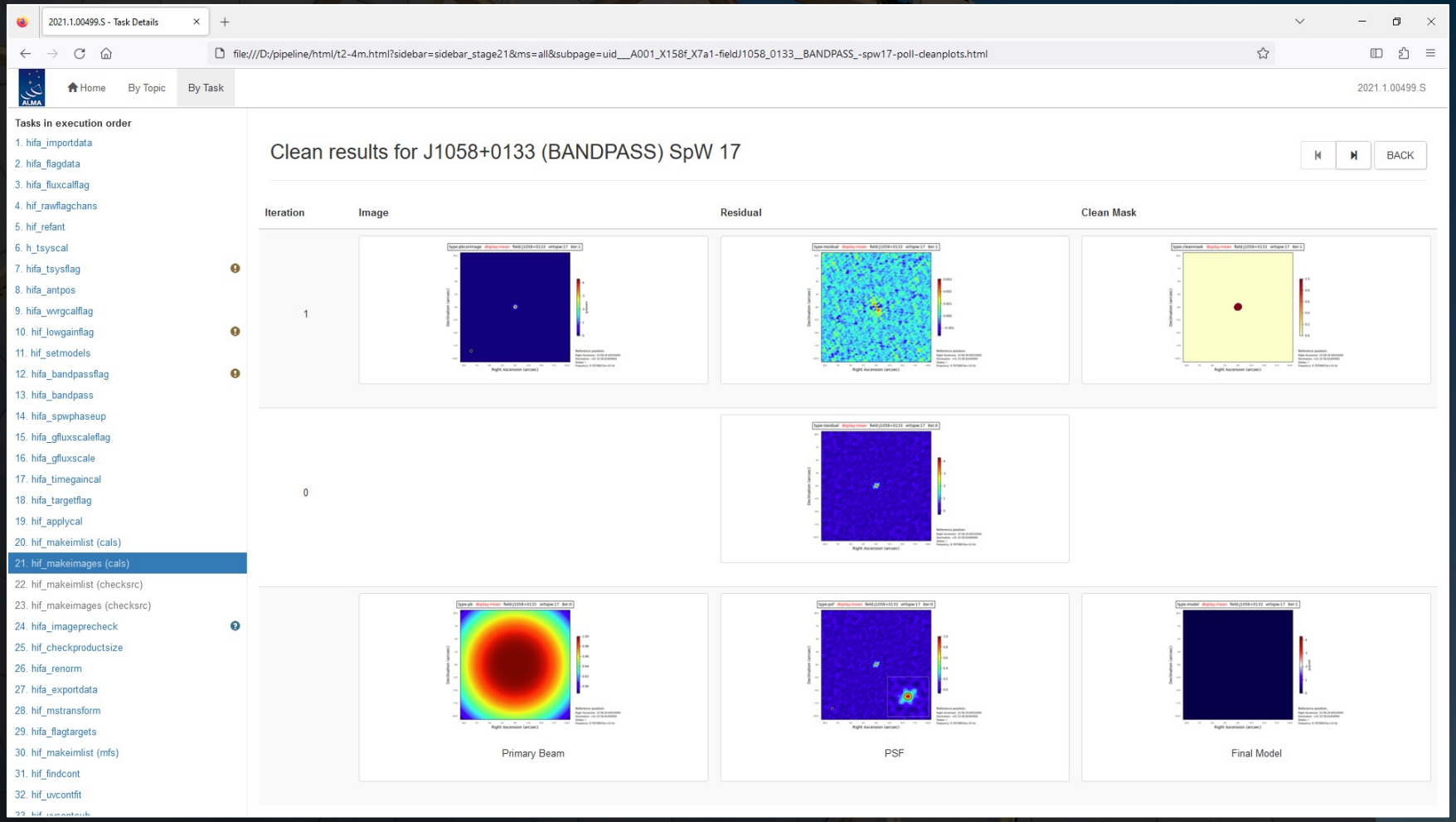
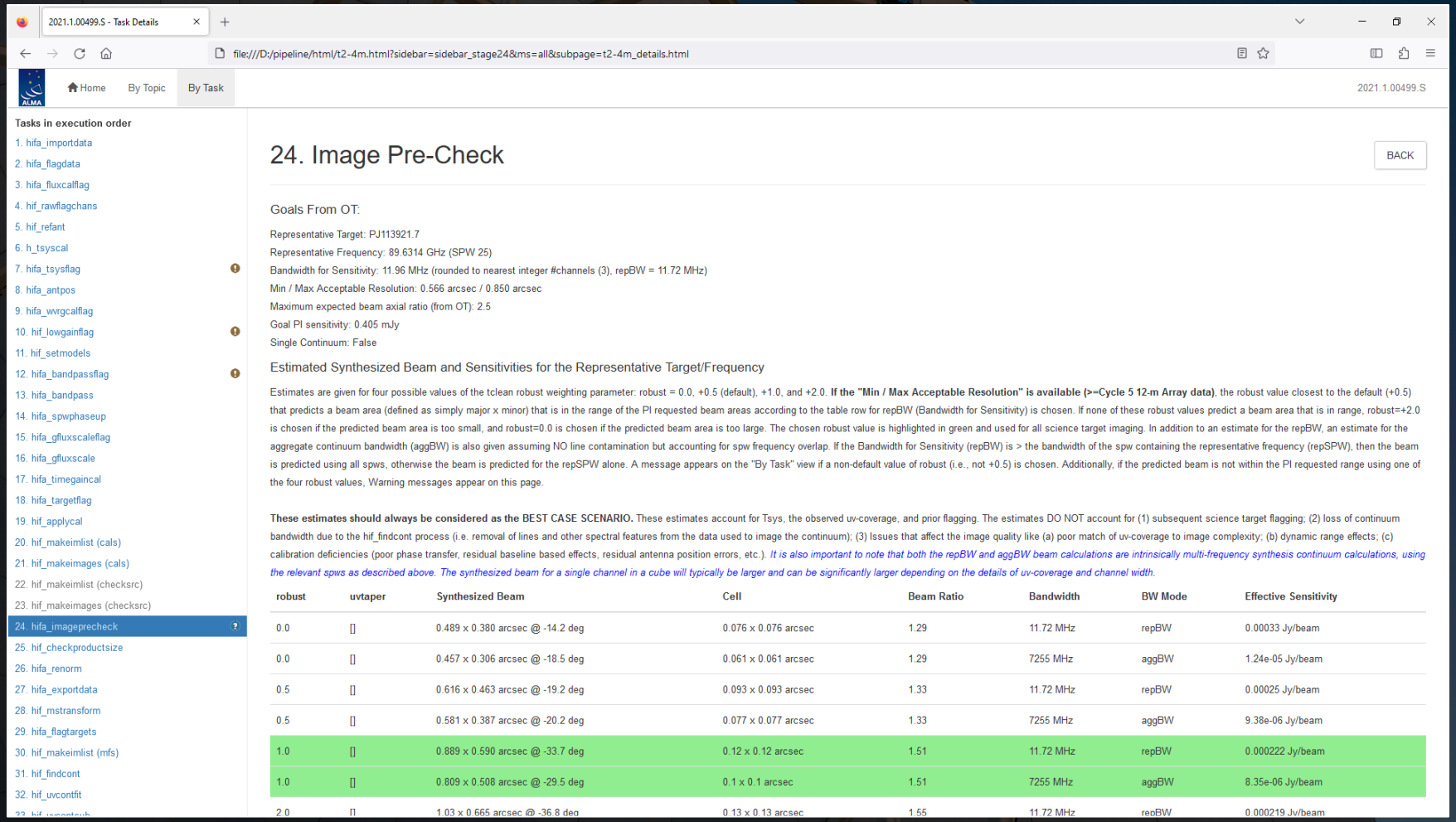


hifa_imageprecheck: This module estimates beam sizes using different robust factors for imaging, which is useful to refer to when re-imaging the data. The row in green is selected for subsequent imaging steps.



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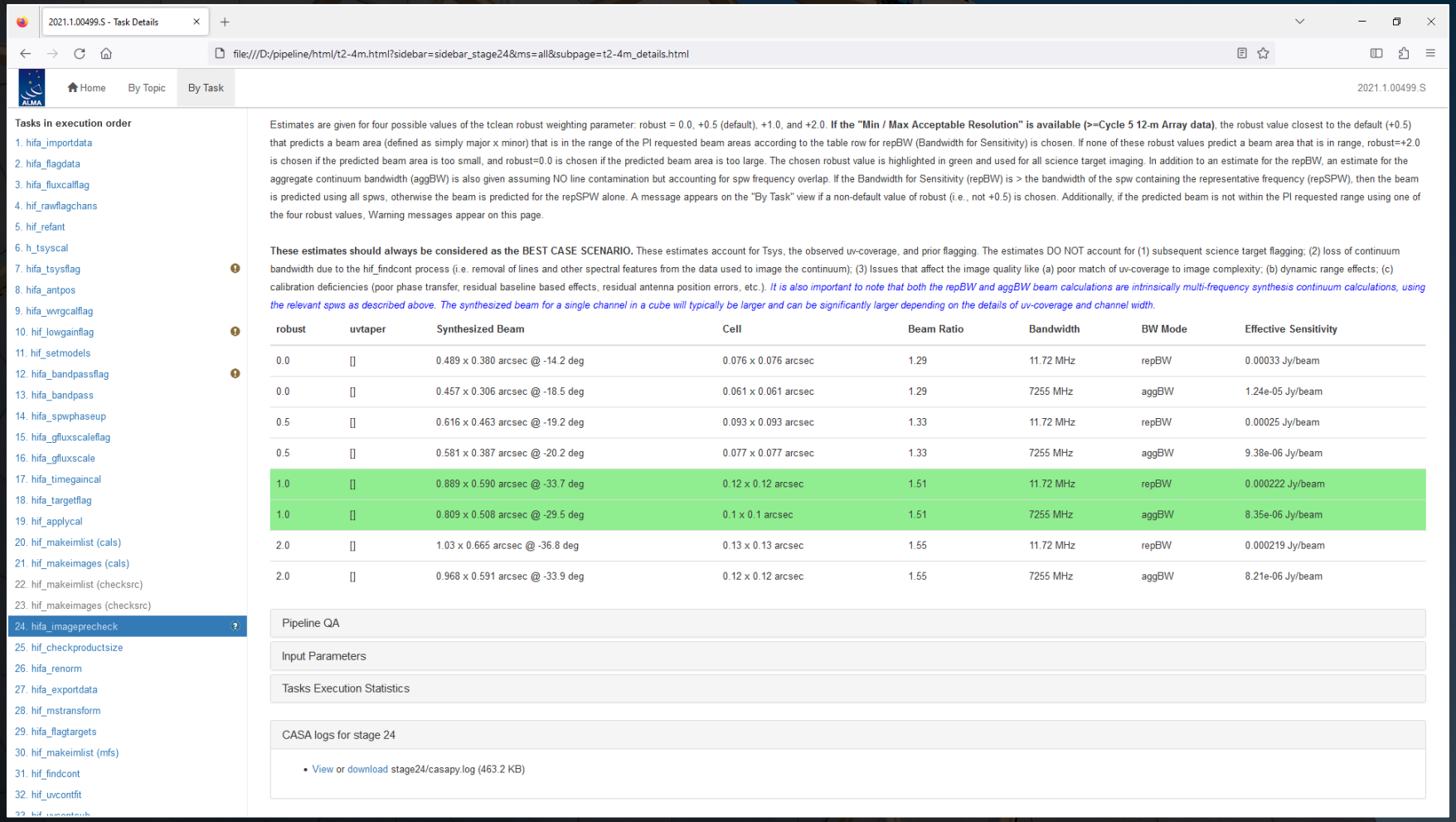


2021.1.00499.S - Task Details

file:///D:/pipeline/html/t2-4m.html?sidebar=sidebar_stage24&ms=all&subpage=t2-4m_details.html

Home | By Topic | By Task | 2021.1.00499.S

Tasks in execution order

1. hifa_importdata
2. hifa_flagdata
3. hifa_fluxcalflag
4. hif_rawflagchans
5. hif_refant
6. h_tsyscal
7. hifa_tsysflag
8. hifa_antpos
9. hifa_wvrgcalflag
10. hif_lowgainflag
11. hif_setmodels
12. hifa_bandpassflag
13. hifa_bandpass
14. hifa_spwphaseup
15. hifa_gfluxscaleflag
16. hifa_gfluxscale
17. hifa_timegaincal
18. hifa_targetflag
19. hif_applycal
20. hif_makeimlist (cals)
21. hif_makeimages (cals)
22. hif_makeimlist (checksrc)
23. hif_makeimages (checksrc)
24. hifa_imageprecheck
25. hif_checkproductsize
26. hifa_renorm
27. hifa_exportdata
28. hif_mstransform
29. hifa_flagtargets
30. hif_makeimlist (mfs)
31. hif_findcont
32. hif_uvcontfit

Estimates are given for four possible values of the tclean robust weighting parameter: robust = 0.0, +0.5 (default), +1.0, and +2.0. **If the "Min / Max Acceptable Resolution" is available (>=Cycle 5 12-m Array data)**, the robust value closest to the default (+0.5) that predicts a beam area (defined as simply major x minor) that is in the range of the PI requested beam areas according to the table row for repBW (Bandwidth for Sensitivity) is chosen. If none of these robust values predict a beam area that is in range, robust=+2.0 is chosen if the predicted beam area is too small, and robust=0.0 is chosen if the predicted beam area is too large. The chosen robust value is highlighted in green and used for all science target imaging. In addition to an estimate for the repBW, an estimate for the aggregate continuum bandwidth (aggBW) is also given assuming NO line contamination but accounting for spw frequency overlap. If the Bandwidth for Sensitivity (repBW) is > the bandwidth of the spw containing the representative frequency (repSPW), then the beam is predicted using all spws, otherwise the beam is predicted for the repSPW alone. A message appears on the "By Task" view if a non-default value of robust (i.e., not +0.5) is chosen. Additionally, if the predicted beam is not within the PI requested range using one of the four robust values, Warning messages appear on this page.

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 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 deficiencies (poor phase transfer, residual baseline based effects, residual antenna position errors, etc.). *It is also important to note that both the repBW and aggBW beam calculations are intrinsically multi-frequency synthesis continuum calculations, using the relevant spws as described above. The synthesized beam for a single channel in a cube will typically be larger and can be significantly larger depending on the details of uv-coverage and channel width.*

robust	uvtaper	Synthesized Beam	Cell	Beam Ratio	Bandwidth	BW Mode	Effective Sensitivity
0.0	[]	0.489 x 0.380 arcsec @ -14.2 deg	0.076 x 0.076 arcsec	1.29	11.72 MHz	repBW	0.00033 Jy/beam
0.0	[]	0.457 x 0.306 arcsec @ -18.5 deg	0.061 x 0.061 arcsec	1.29	7255 MHz	aggBW	1.24e-05 Jy/beam
0.5	[]	0.616 x 0.463 arcsec @ -19.2 deg	0.093 x 0.093 arcsec	1.33	11.72 MHz	repBW	0.00025 Jy/beam
0.5	[]	0.581 x 0.387 arcsec @ -20.2 deg	0.077 x 0.077 arcsec	1.33	7255 MHz	aggBW	9.38e-06 Jy/beam
1.0	[]	0.889 x 0.590 arcsec @ -33.7 deg	0.12 x 0.12 arcsec	1.51	11.72 MHz	repBW	0.000222 Jy/beam
1.0	[]	0.809 x 0.508 arcsec @ -29.5 deg	0.1 x 0.1 arcsec	1.51	7255 MHz	aggBW	8.35e-06 Jy/beam
2.0	[]	1.03 x 0.665 arcsec @ -36.8 deg	0.13 x 0.13 arcsec	1.55	11.72 MHz	repBW	0.000219 Jy/beam
2.0	[]	0.968 x 0.591 arcsec @ -33.9 deg	0.12 x 0.12 arcsec	1.55	7255 MHz	aggBW	8.21e-06 Jy/beam

Pipeline QA

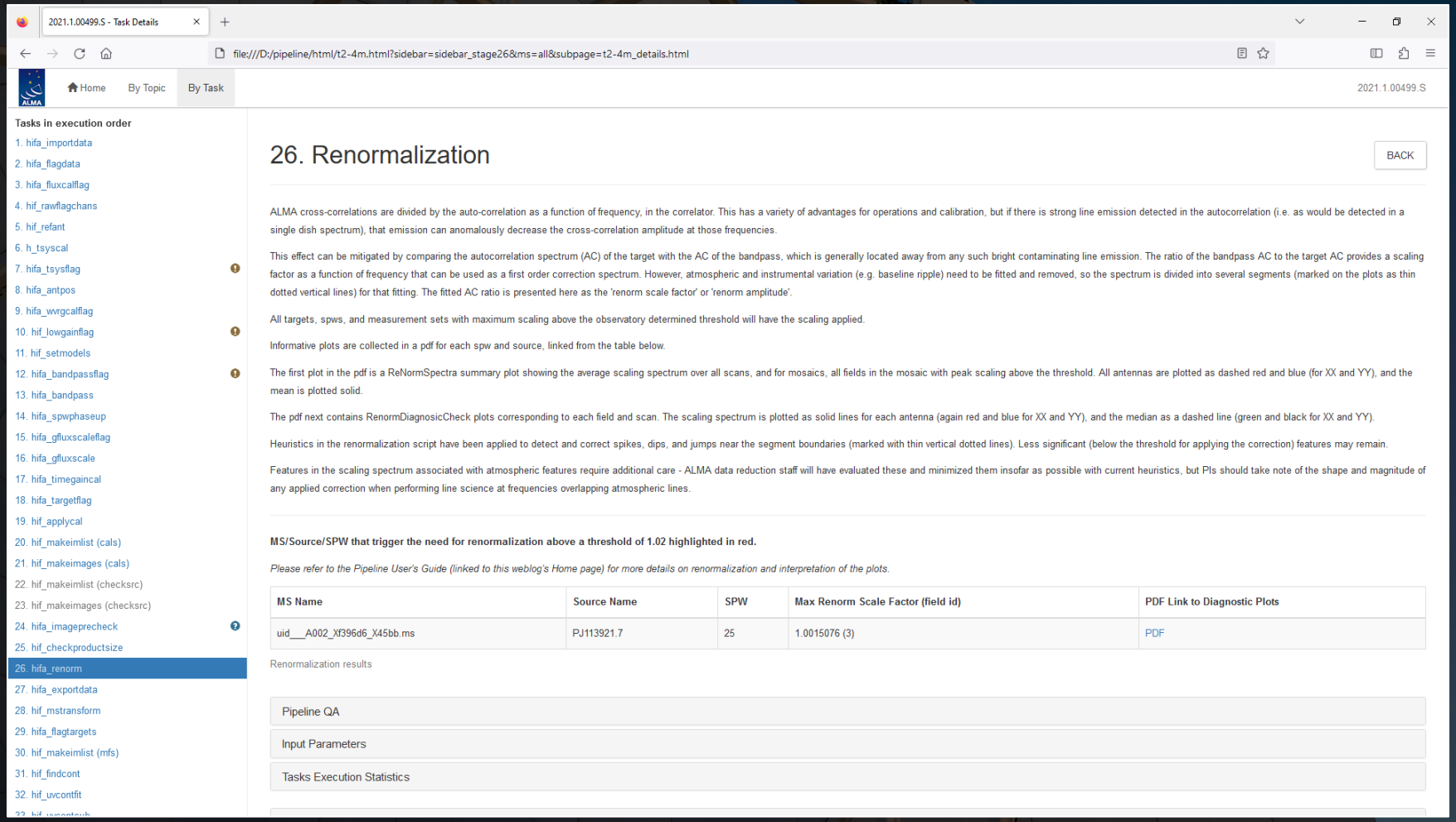
Input Parameters

Tasks Execution Statistics

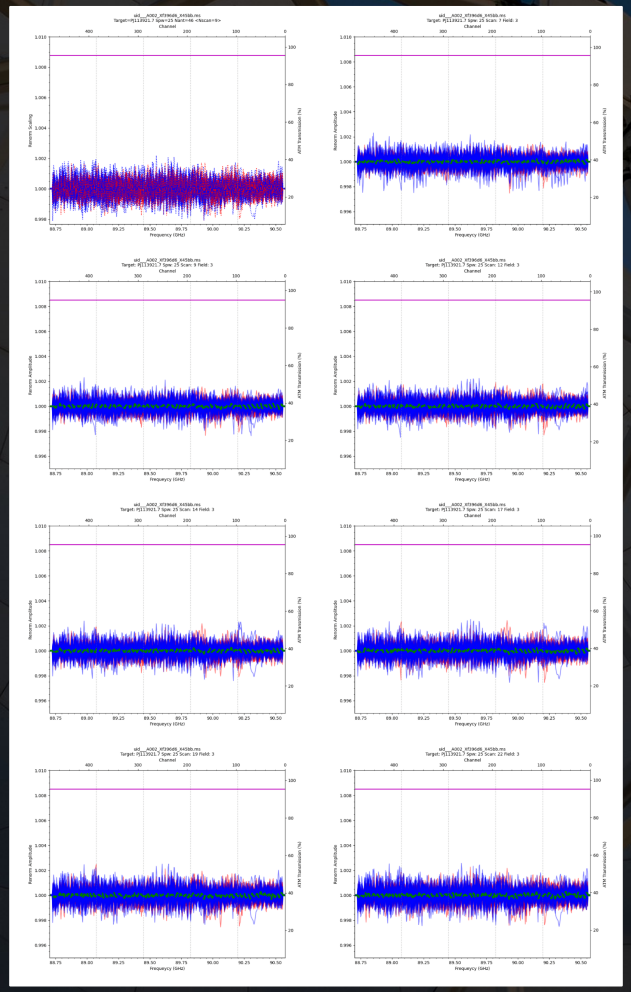
CASA logs for stage 24

- View or download stage24/casapy.log (463.2 KB)

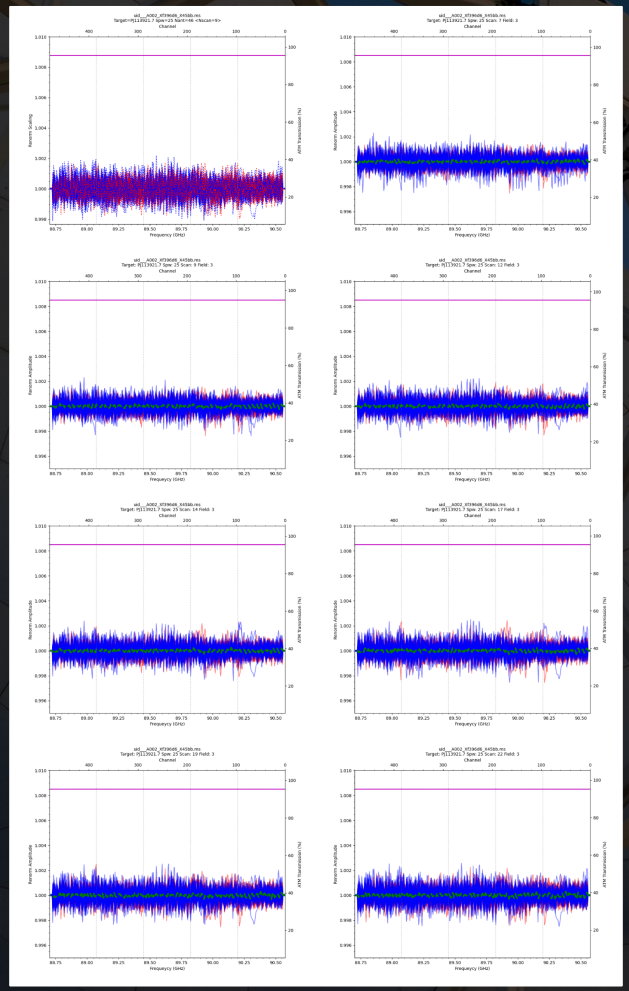
hifa_renorm: This module determines whether a correction needs to be applied to the data scaling if bright spectral lines are present in the data. The correction is applied if the renorm scale factors in the tables are greater than 1.02.



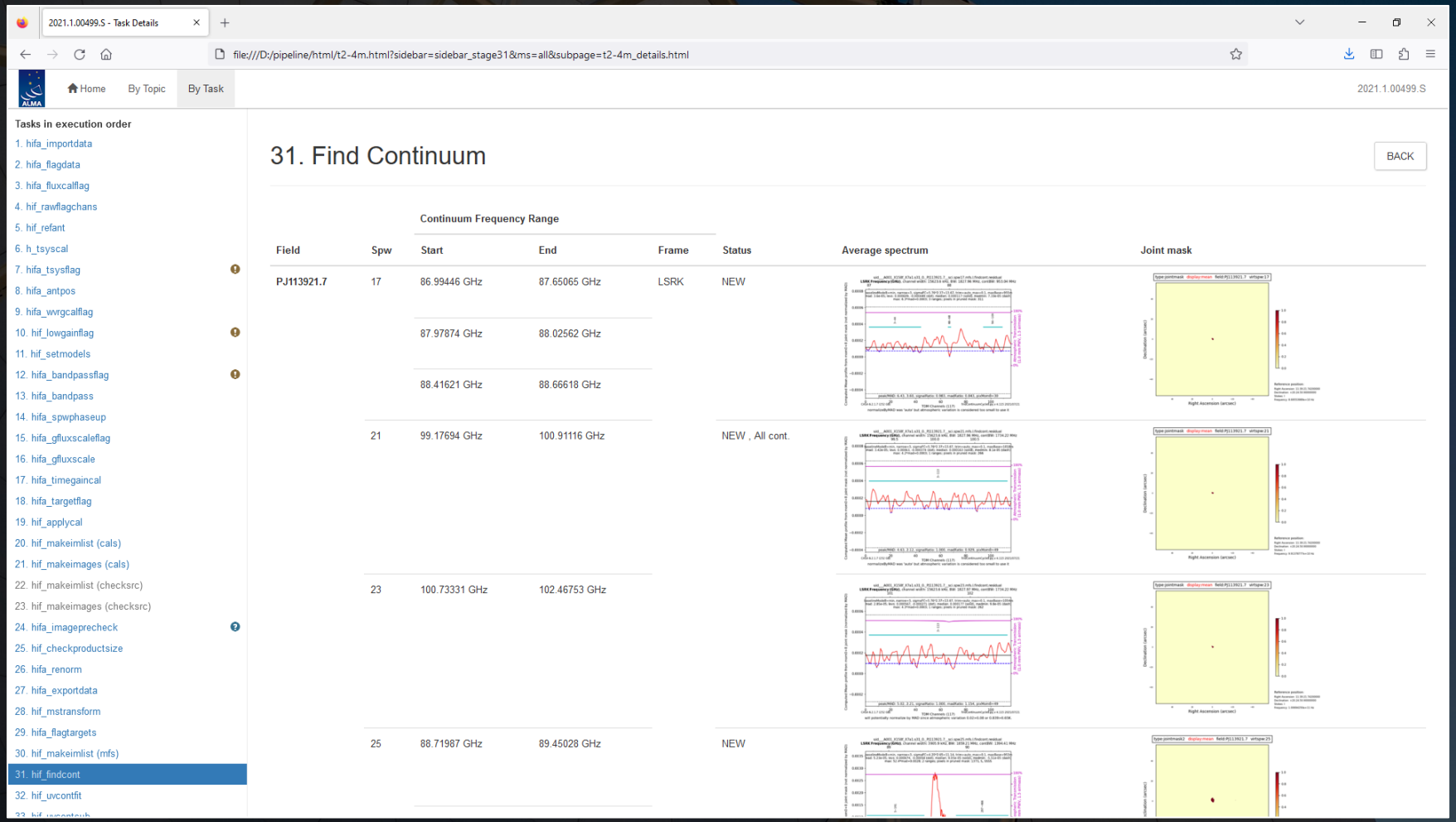
The PDF linked in this page contains the diagnostic plots. If renormalization is triggered, it is useful to check that it is because of spectral lines from the source and not atmospheric spectral features (which will correspond to dips in the atmospheric transmission curves).



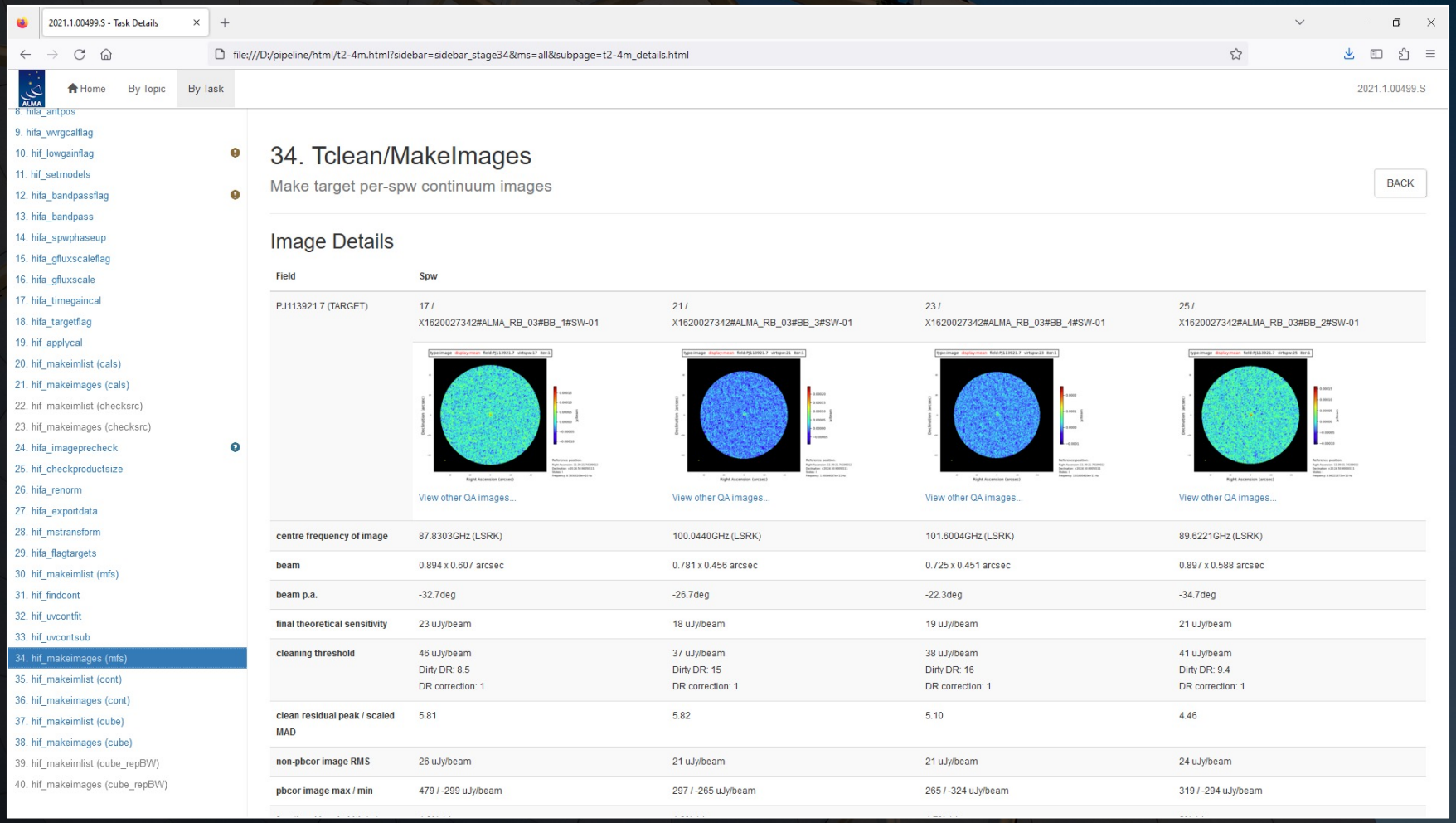
If the module was triggered by atmospheric spectral features, the pipeline may need to be re-run with this module disabled.



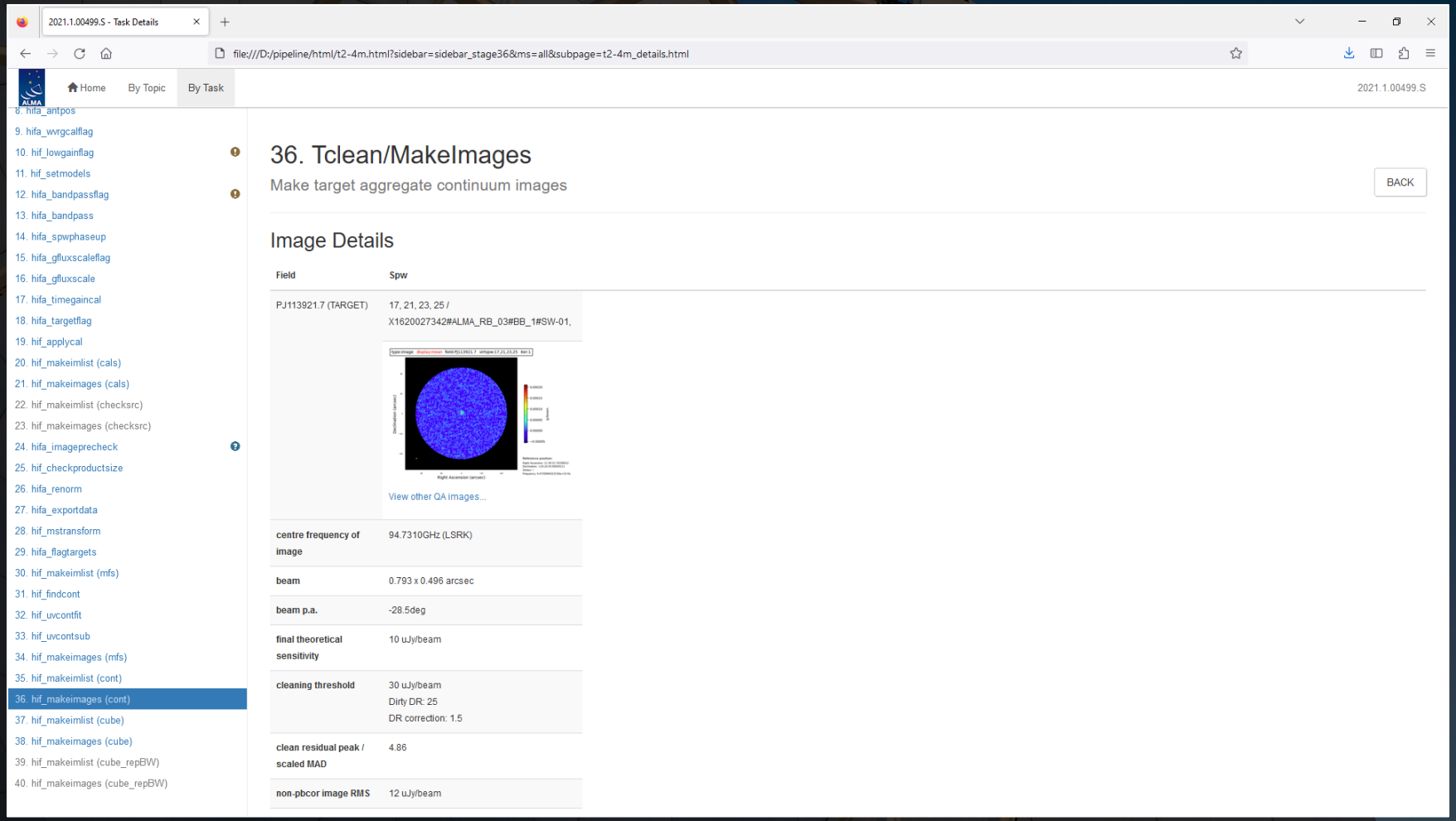
hif_findcont: This is where the pipeline creates initial image cubes and identifies continuum channels (although the identification is not always optimal). This is useful as a first look at the spectra, although re-imaging the data may be much more effective for identifying spectral lines.



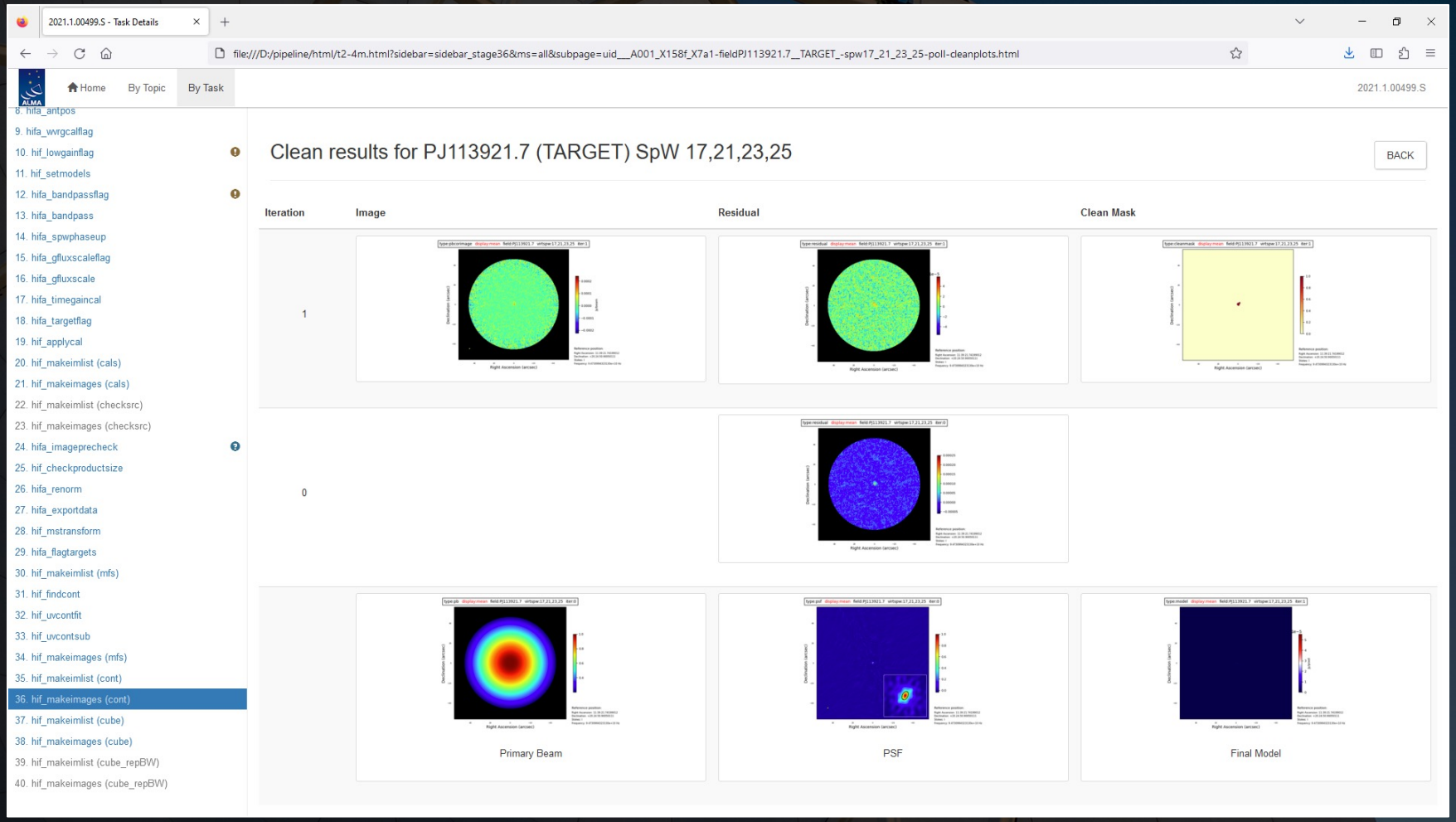
hif_makeimages: Several steps near the end of the pipeline (for multiple different types of output images) have this name. These pages are useful for seeing an overview of the imaging results, particularly with regards to information like beam sizes and noise levels.



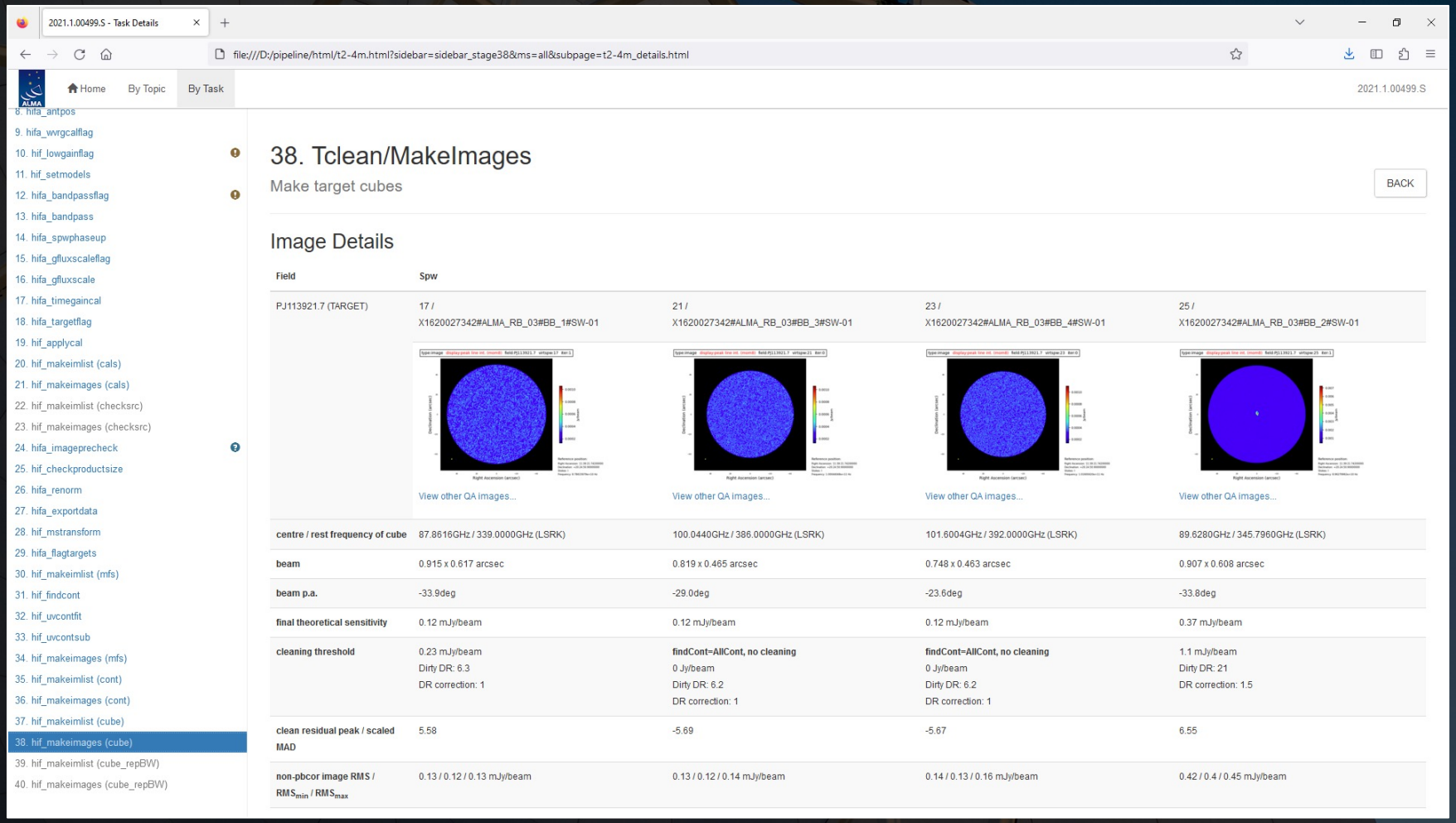
hif_makeimages: Several steps near the end of the pipeline (for multiple different types of output images) have this name. These pages are useful for seeing an overview of the imaging results, particularly with regards to information like beam sizes and noise levels.



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.



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.



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.