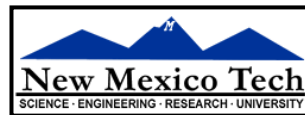


ALMA Pipeline products and restoring calibrated data



Seventeenth Synthesis Imaging Workshop
29 June – July 17 2020



ALMA Pipeline products and restoring calibrated data



ALMA Data Reduction Tutorial
Synthesis Imaging Summer School

Atacama Large Millimeter/submillimeter Array
Expanded Very Large Array
Robert C. Byrd Green Bank Telescope
Very Long Baseline Array



Tutorial download link – for people using their own computers

The data for this tutorial can be downloaded from this link:

https://bulk.cv.nrao.edu/almadata/public/ALMA_tutorial/Download_files/Pipeline/

The directory also includes the presentation (ALMA-Pipeline-tutorial-SISS2020.pdf) and an example imaging script (scriptForImaging_robust0.py)

Download all the files to a directory named Pipeline

Untar the files using the following command (change file name as needed):

```
tar xvf 2019.1.00195.L_uid__A001_XI46c_Xa2_001_of_001.tar
```



Tutorial data repository – for people using NRAO resources

Login to the **NRAO** cluster node on your computer, following instructions sent to you.

The data for this tutorial are in the **SDP8I** directory

```
> cd /lustre/aoc/siw/nrao/data/ALMA/Pipeline
```

Copy all files from the **SDP8I** directory to your data directory

```
> cp -r * /lustre/aoc/observers/nm-****/data/.
```

```
> mkdir Pipeline
```

Untar the files using the following command (change file name as needed) to Pipeline directory:

```
tar xvf 2019.1.00195.L_uid___A001_X146c_Xa2_001_of_001.tar
```



Tutorial data repository – for people using NRAO resources

The presentation and an example imaging script can be downloaded at:

https://bulk.cv.nrao.edu/alma/data/public/ALMA_tutorial/Download_files/Pipeline/

Presentation: ALMA-Pipeline-tutorial-SISS2020.pdf

Imaging script: scriptForImaging_robust0.py

CASA version – 5.6.1-8 containing ALMA pipeline

The **CASA** version used for this tutorial can be downloaded from this link (download **CASA** containing **ALMA** pipeline 5.6.1-8):

https://casa.nrao.edu/casa_obtaining.shtml

Also download the **Analysis Utilities** package and edit **CASA** initialization file following instructions here:

https://casaguides.nrao.edu/index.php/Analysis_Utilities

For participants using **NRAO** resources:

Default casa version on **NM** cluster is casa 5.6.1-8.e17

Copy **analysis_scripts.tar** from

/lustre/aoc/siw/nrao/data/ALMA/ to your home directory, untar and edit casa initialization file as described in link above



Tutorial Startup

NM-lustre users: Login from your computer

```
> cd /lustre/aoc/observers/nm-****/data
```

Everyone:

```
> cd Pipeline
```

CASA Startup

\$ `casa --pipeline` (or `casa -r version --pipeline`, e.g. `casa -r 5.6.1-8.el7 --pipeline` if you have multiple casa versions installed)

```

nmpost018$ casa --pipeline
=====
The start-up time of CASA may vary
depending on whether the shared libraries
are cached or not.
=====

IPython 5.1.0 -- An enhanced Interactive Python.

PIPELINE CASA 5.6.1-8 -- Common Astronomy Software Applications

Found an existing telemetry logfile: /lustre/aoc/observers/nm-4372/.casa/casasta
ts-561-8-2c02c472202fa3ae-20200617-182840-PIPELINE.log
Telemetry initialized, Telemetry will send anonymized usage statistics to NRAO.
You can disable telemetry by adding the following line to your ~/.casarc file:
EnableTelemetry: False
2020-06-19 15:33:55 INFO: Environment is not MPI enabled. Pipeline operating in
single host mode
2020-06-19 15:34:02 INFO: Environment variable FLUX_SERVICE_URL not defined. Sw
itching to backup url.
2020-06-19 15:34:02 INFO: Environment variable FLUX_SERVICE_URL_BACKUP not defin
ed.
2020-06-19 15:34:03 INFO: Pipeline version 42866 (Pipeline-CASA56-P1-B) running on nmpost018
2020-06-19 15:34:03 INFO: Host environment: 188.8 GB memory, 16 x Intel(R) Xeon(R) CPU E5-2670 0 @ 2.60GHz running Red Hat Enterprise Linux 7.6
2020-06-19 15:34:03 INFO: Initializing cli...
2020-06-19 15:34:04 INFO: Loaded CASA tasks from package: h
2020-06-19 15:34:04 INFO: Loaded CASA tasks from package: hif
2020-06-19 15:34:05 INFO: Loaded CASA tasks from package: hifa
2020-06-19 15:34:05 INFO: Loaded CASA tasks from package: hifv
2020-06-19 15:34:05 INFO: Loaded CASA tasks from package: hfd
casaversion = 5.6.1-8
imported casatasks and tools using taskinit *
--> CrashReporter initialized.
Enter doc('start') for help getting started with CASA
CASA <>: 
    
```

Log Messages (nmpost018:/lustre/aoc/observers/nm-4372/casa-20200619-153346.log)

Time	Priority	Origin	Message
2020-06-19 15:33:51	INFO	::casa	
2020-06-19 15:33:51	INFO	::casa	Checking telemetry submission interval
2020-06-19 15:33:51	INFO	::casa	Telemetry submit interval not reached. Not submitting data.
2020-06-19 15:33:51	INFO	::casa	Next telemetry data submission in: 5 days, 2:54:49.748735
2020-06-19 15:33:51	INFO	::casa	CASA Version PIPELINE 5.6.1-8
2020-06-19 15:33:55	INFO	...rs::casa	Environment is not MPI enabled. Pipeline operating in single host mode
2020-06-19 15:34:02	INFO	...rs::casa	CASA Version 5.6.1-8
2020-06-19 15:34:02	INFO	...rs::casa	
2020-06-19 15:34:02	INFO	...rs::casa	CASA Version 5.6.1-8
2020-06-19 15:34:02	INFO	...rs::casa	
2020-06-19 15:34:02	INFO	...es::casa	Environment variable FLUX_SERVICE_URL not defined. Switching to backup url.
2020-06-19 15:34:02	INFO	...es::casa	Environment variable FLUX_SERVICE_URL_BACKUP not defined.
2020-06-19 15:34:04	INFO	...ne::casa	Pipeline version 42866 (Pipeline-CASA56-P1-B) running on nmpost018
2020-06-19 15:34:04	INFO	...ne::casa	Host environment: 188.8 GB memory, 16 x Intel(R) Xeon(R) CPU E5-2670 0 @ 2.60GHz running Red Hat Enterprise Linux 7.6
2020-06-19 15:34:04	INFO	...ne::casa	Initializing cli...
2020-06-19 15:34:04	INFO	...ne::casa	Loaded CASA tasks from package: h
2020-06-19 15:34:04	INFO	...ne::casa	Loaded CASA tasks from package: hif
2020-06-19 15:34:05	INFO	...ne::casa	Loaded CASA tasks from package: hifa
2020-06-19 15:34:05	INFO	...ne::casa	Loaded CASA tasks from package: hifv
2020-06-19 15:34:05	INFO	...ne::casa	Loaded CASA tasks from package: hfd