

# ASKAP Pipeline

Basic calibration

Polarization Calibration

- on-axis leakage
- sky-frame Stokes parms.

Imaging

- MFS Stokes I images
- Stokes IQUV cubes
- off-axis leakage (beam model)*
- convolution to common (*survey?*) resolution

Automated Validation

- Stokes I validation scripts
- polarization validation scripts

CASDA ingest

- images and cubes uploaded to CASDA at level 5

Level 6 validation

- data is inspected, validated, released on CASDA

Ionospheric TEC maps  
(Delay in availability 1-14 days)

## Pre-processing/AusSRC pipeline

Ionospheric correction

- compute mean RM, depolarization caused by ionospheric variability
- correct mosaic Q,U cubes to remove ionospheric RM

Super-mosaicking

- mosaic several observations together
- convolution to common/survey beam?

Observation-to-tile map

- from survey observation plan, make list of observations contributing to each tile
- event system to trigger workflow?

Tiling

- divide images, cubes (and weight maps/cubes?) into single-observation tiles.

Stokes I component catalog  
-from EMUcat

CADC transfer

- move final files to CADC storage

## PPC/1D Pipeline

Per source component

Extract polarized spectra

- extract averaged 5x5 px box
- local noise calculated from MADFM of annulus
- diffuse subtraction?*
- save frequency spectra

RM Synthesis

- FD spectra generated
- parameters not yet decided (dPhi, Phi\_max)*
- RM clean?*
- save RM spectra

Polarization characterization

- fit peak in FD spectrum
- extract pol. parameters (PI, EVPA, RM, etc)
- estimate Faraday complexity

Merge all information

- source component information from Selavy
- polarization information from RM synthesis
- observation information from header/meta data
- data quality information from meta data*

Post-processing

- identify detections/non-detections, duplicates*
- merge adjacent tiles (pilot)?*
- flags (complexity, data quality, etc)*
- RM-Grid assessment?*

Database

- store in database at CADC

## Diffuse/resolved 3D Pipeline

Source cutouts

- extract cutouts around sources

Divide into chunks

- divide cube into pieces small enough to process efficiently

Estimate noise in cubes?

- estimate 1D or 3D noise

Stokes I model fit

Run 3D RM synthesis

- run RM synthesis to generate FDF cubes
- parameters uncertain: dPhi, Phi max, weighting, CLEAN?*

Calculate peak maps

- run peak fitting per pixel
- save peak products*

Assemble, compress, and store products

- reassemble product chunks
- compress/decimate RMSF?*

## Advanced pipeline(s)

Characterize resolved sources

Measure multiple RM components

**MAGIC**

Find high depolarization sources

Find sources with polarization offsets

Re-image for diffusion emission

Integrate single dish data