ASTRON

Netherlands Institute for Radio Astronomy

update from the

LSM 20 January 2016

Emanuela Orrù, Tammo Jan Dijkema, Jess Broderick, Bas van der Tol,
Stefan Fröhlich, David Rafferty, Andreas Horneffer, Tim Shimwell + others

ASTRON is part of the Netherlands Organisation for Scientific Research (NWO)

CITT2 project overview

Duration: October 2015 – September 2017

Work streams:

- Factor / HBA calibration
- LBA calibration
- AWImager

+ maintenance of DPPP / BBS / AWImager / PyBDSM

Time line

- October 2015: Start of project
- 9 – 11 December 2015: Factor Busy Week 23
- 25 – 29 January 2016: Surveys Workshop on Facet Calibration
- 22 – 25 February 2016: Factor Busy Week 24
- 29 Feb – 4 March 2015: LBA expert workshop at Leiden
- Mid 2016 Workshop “Factor for dummies”

DPPP + AWImager developments

- DPPP predict can now (release 2.15, Jan 25 2016) be used for subtracting sources

```
steps=[predict]
predict.operation        = subtract
predict.sourcedb         = 3C196.sourcedb
predict.applycal.parmdb = instrument     # corrupt the sources
```

- Smart Demix commissioned, works (to be adopted by RO)

- Issue resolved in AWImager2 which caused it to write only zeros.
  To use AWImager2:

```
source /opt/cep/tools/citt/lofarinit.sh
```

- Image Domain Gridding being tested on GPUs by Dome group

Factor Busy Week 23

Participants:

CITT + Sarrvesh, George Heald, David Mulcahy, Josh Albert, Soomyajit Mandal, Alexander Drabent, Duy Hoang, Edwin Retana Montenegro

Main goal:

Testing Factor (automated facet calibration) on many fields

Results:

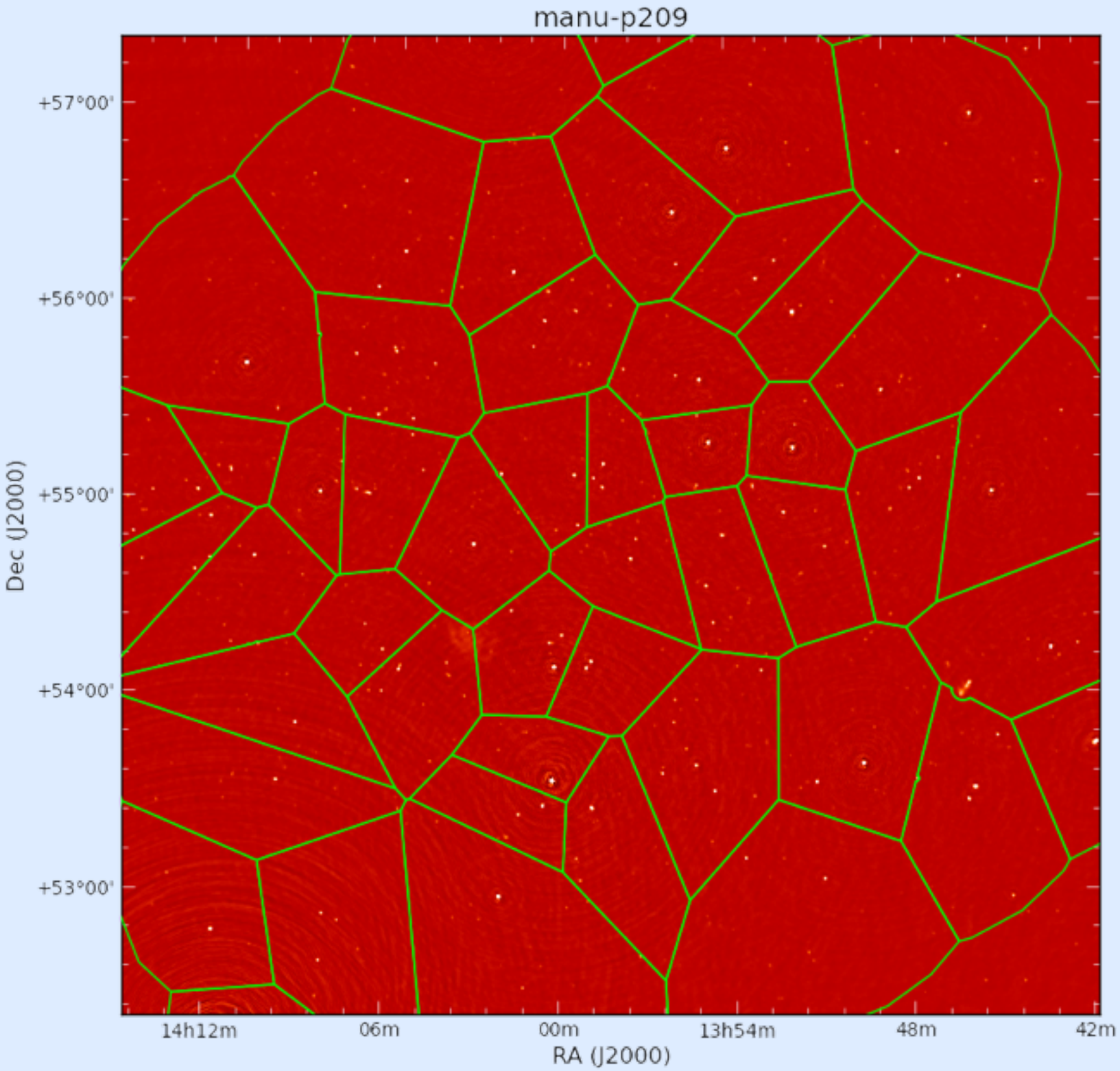
- issue found that made awimager2 + IDG slow in some cases (solved)
- prefactor is now stable
- initsubtract is ok now
- first few facets work ok
- version for interleaved observations to be tested in Busy Week 24

Oversimplified version of Factor

Very much oversimplified, see all previous talks, and documentation:
www.astron.nl/citt/facet-doc

Prefactor	Initial subtract	Prepare facets	Selfcal per facet	Mosaic
Calibration: - Flux calibration - Clock / TEC - Flagging soln's - Diagnostic plots	Image at high resolution Subtract high resolution model Image at low resolution Subtract low resolution model Merge low- and high-res models	Find calibrators, make tesselation	Add calibrators to facet, do selfcal on full bandwidth with heavy averaging - 2x phase only - 2x amp+phase Add all facet sources Image at high resolution (1.5") Subtract facet sources	

Results of initial subtract step



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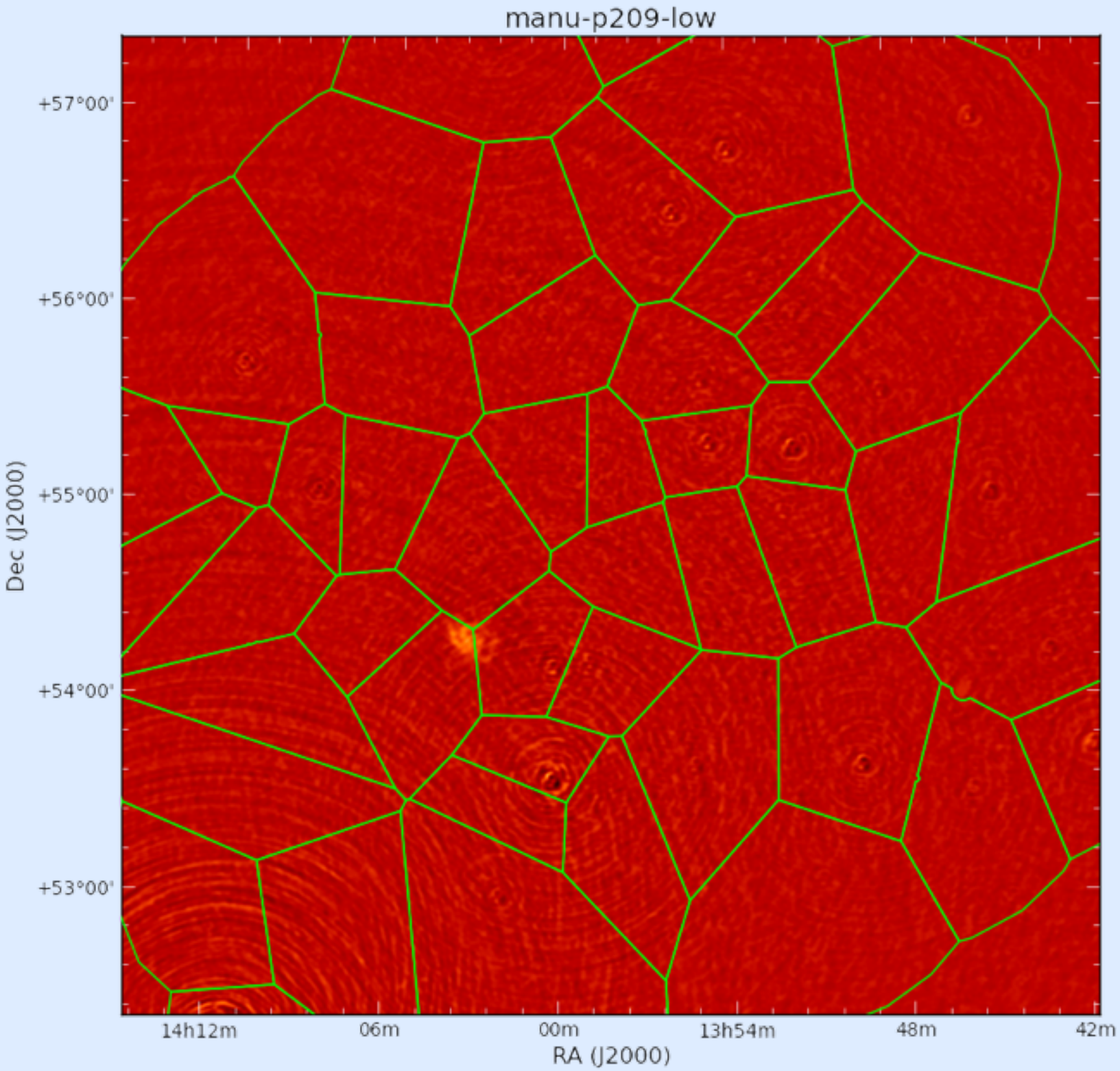

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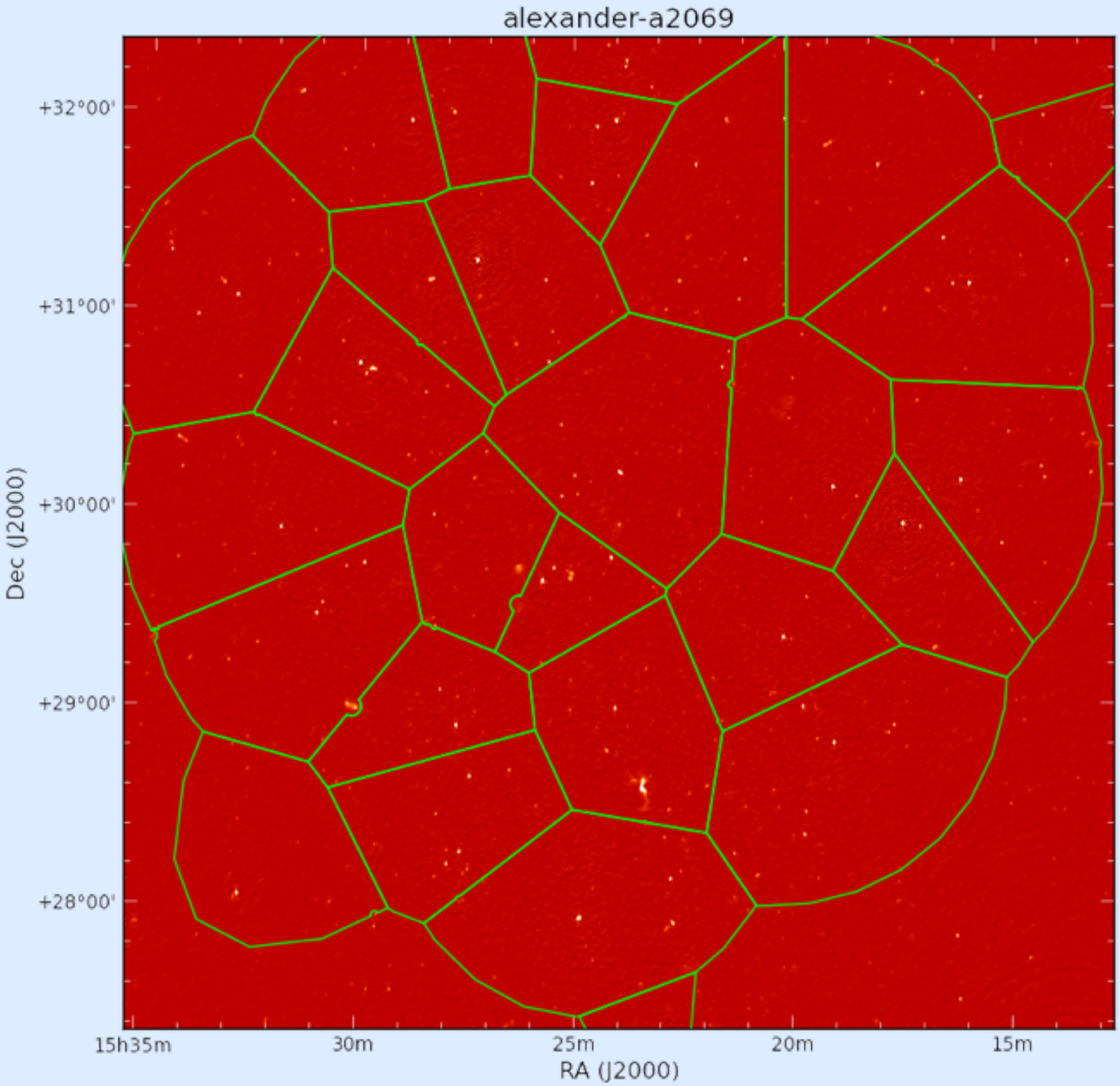

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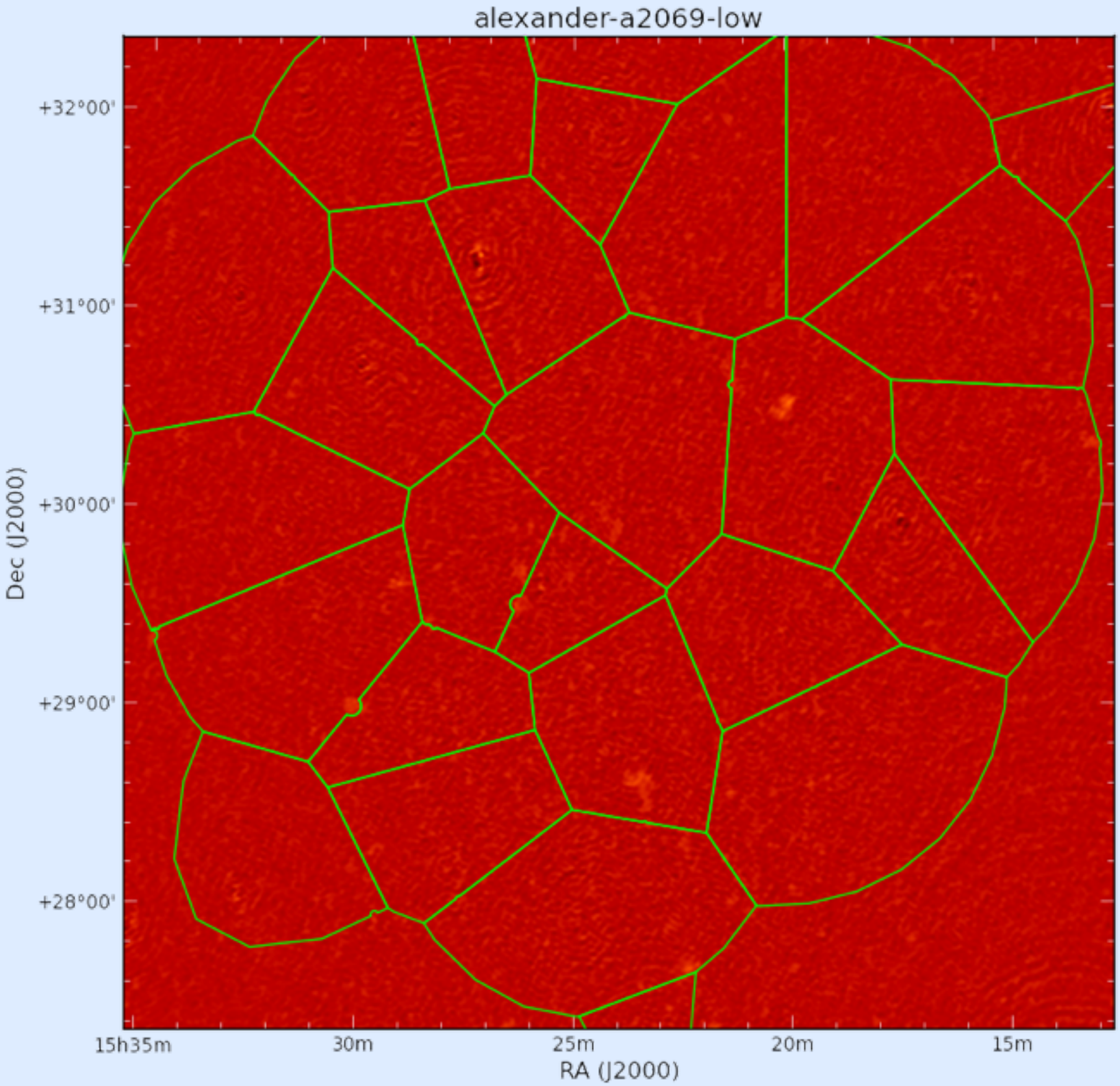

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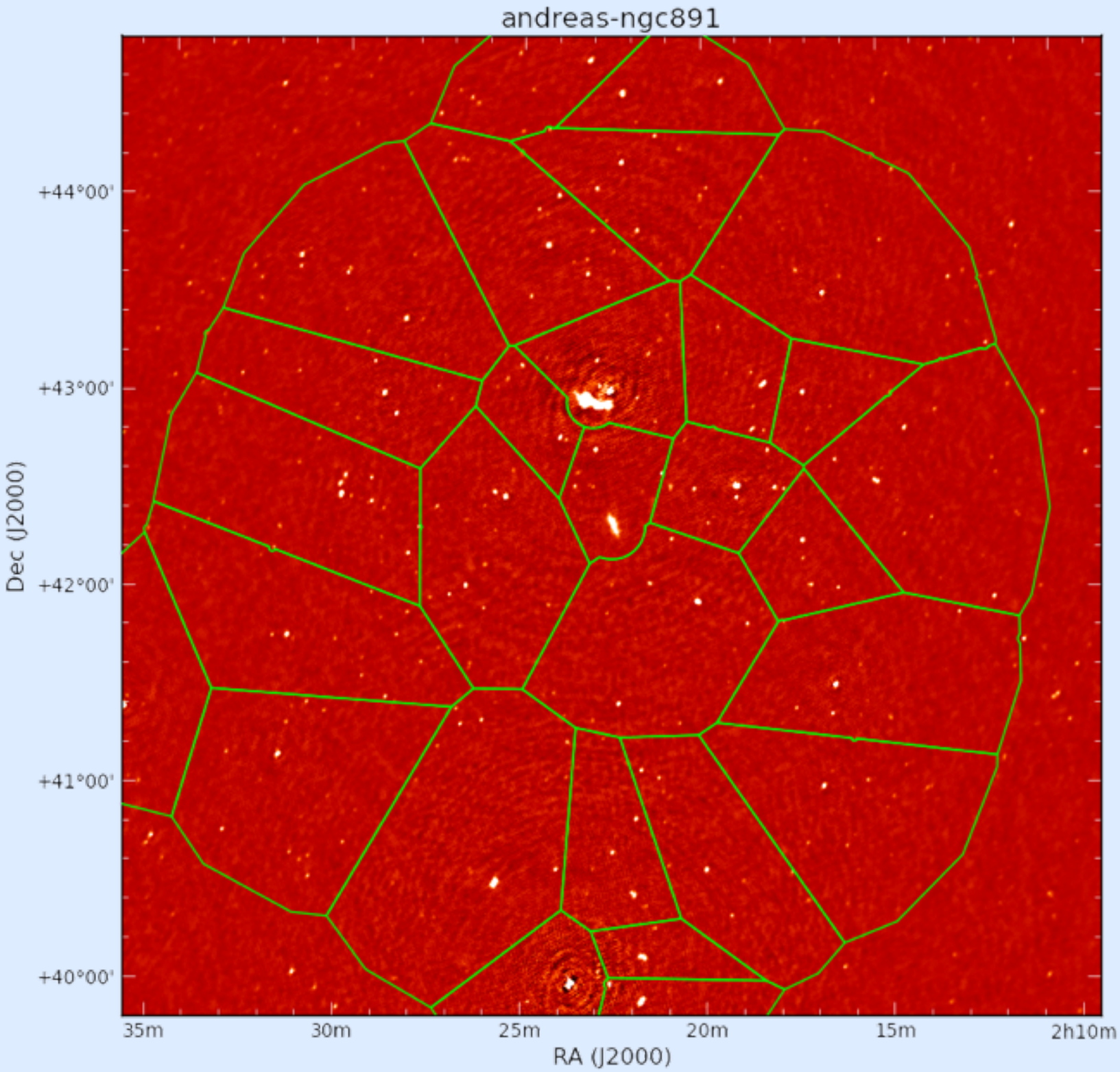

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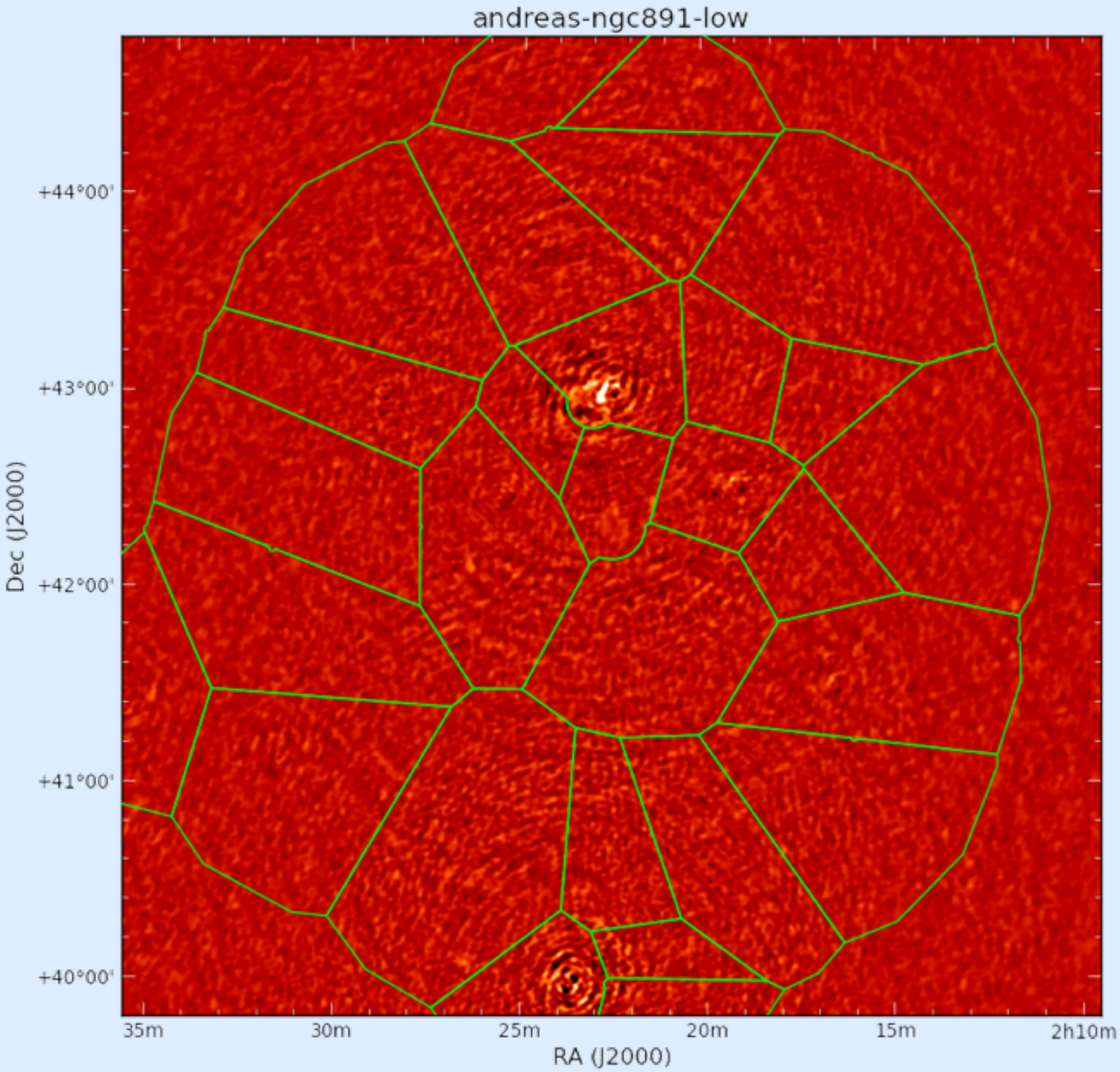

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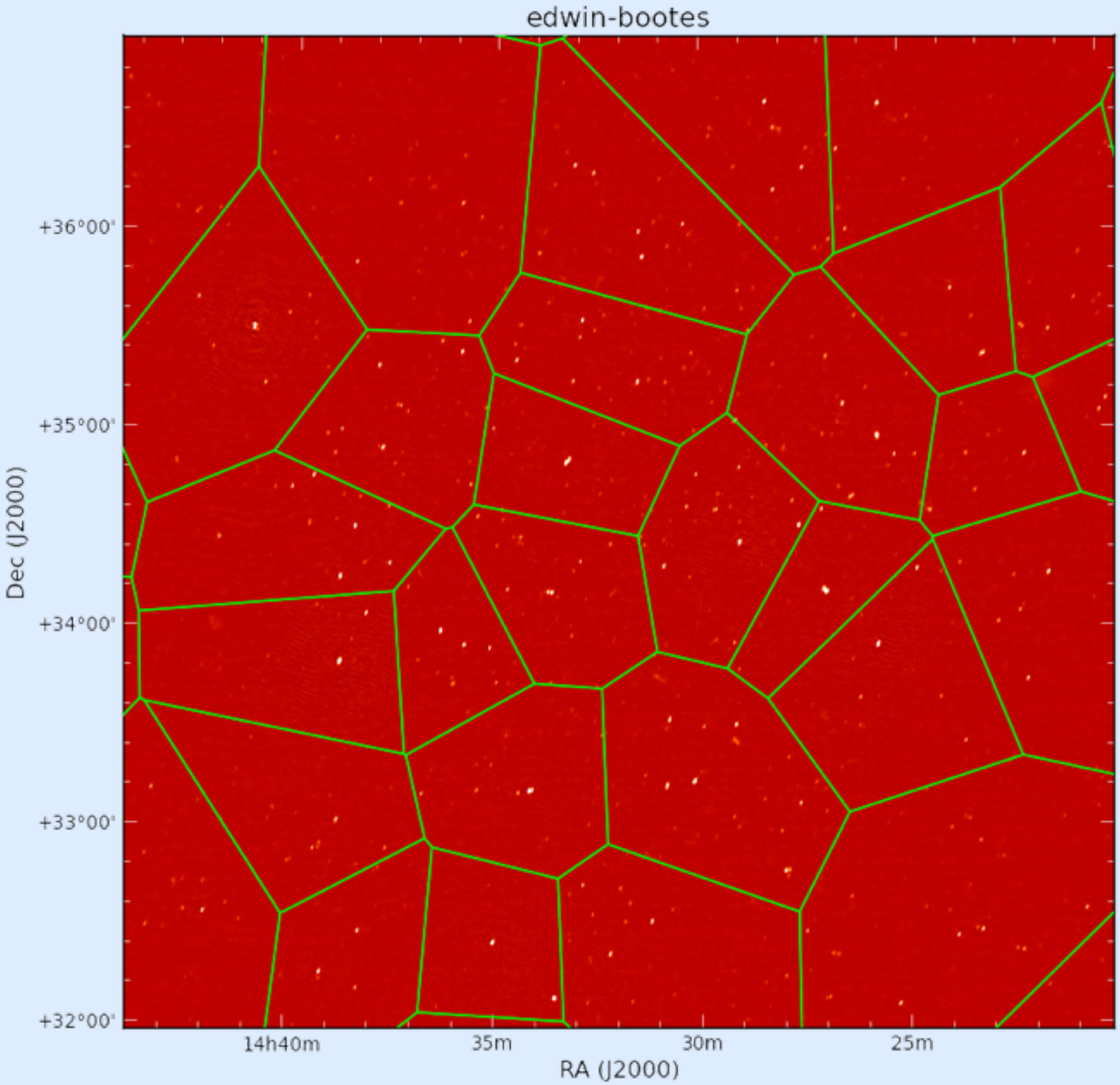

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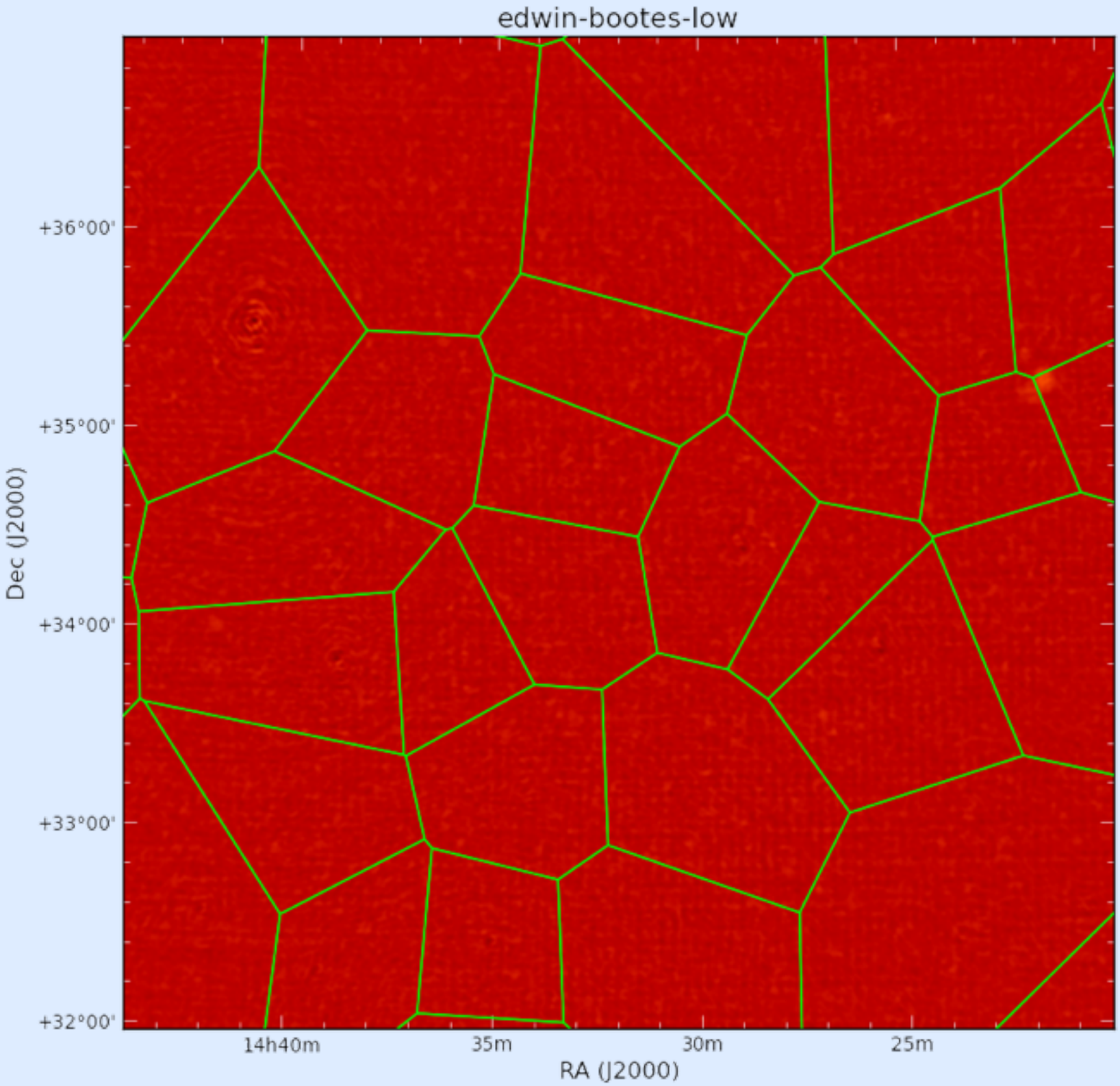

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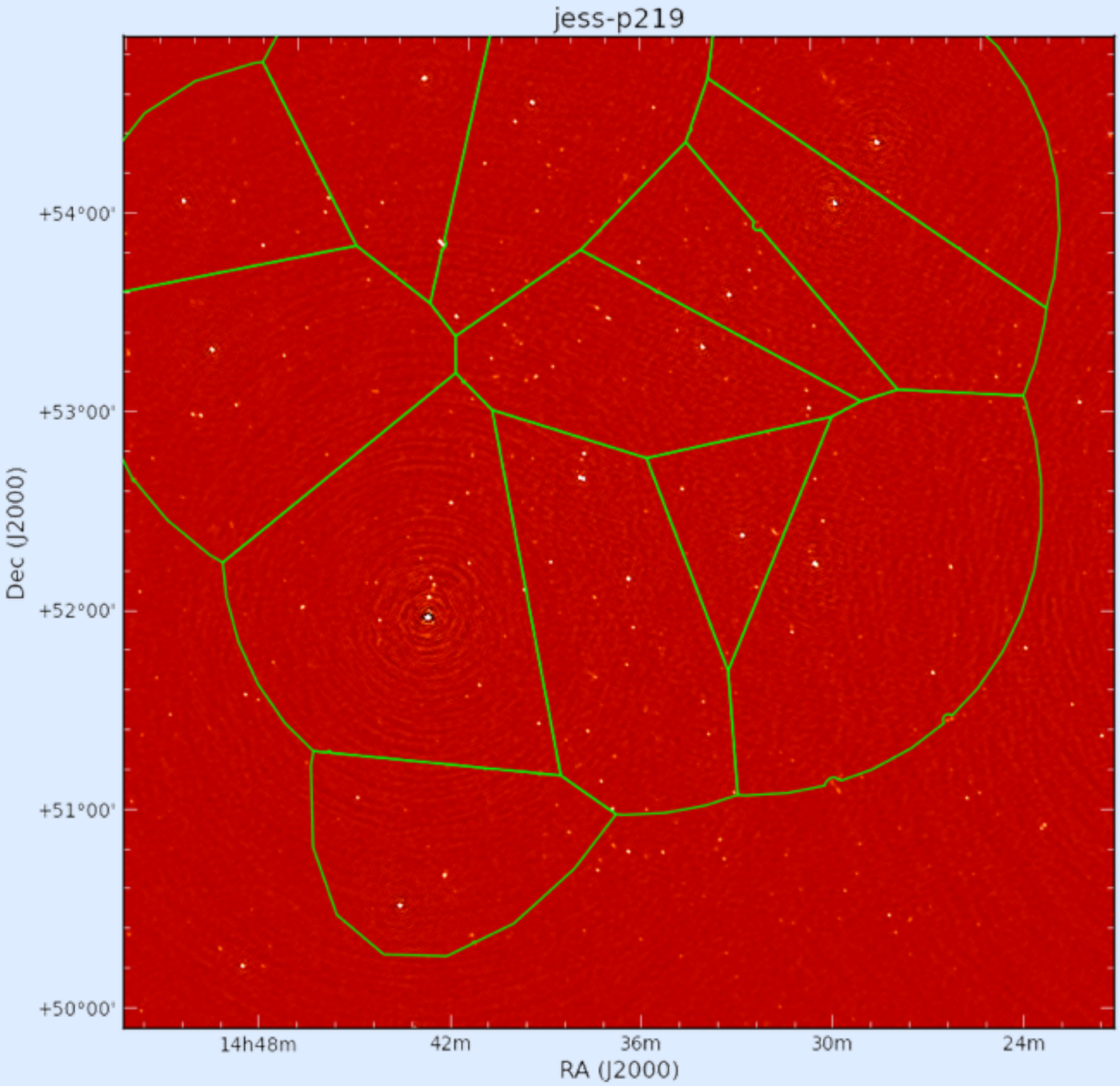

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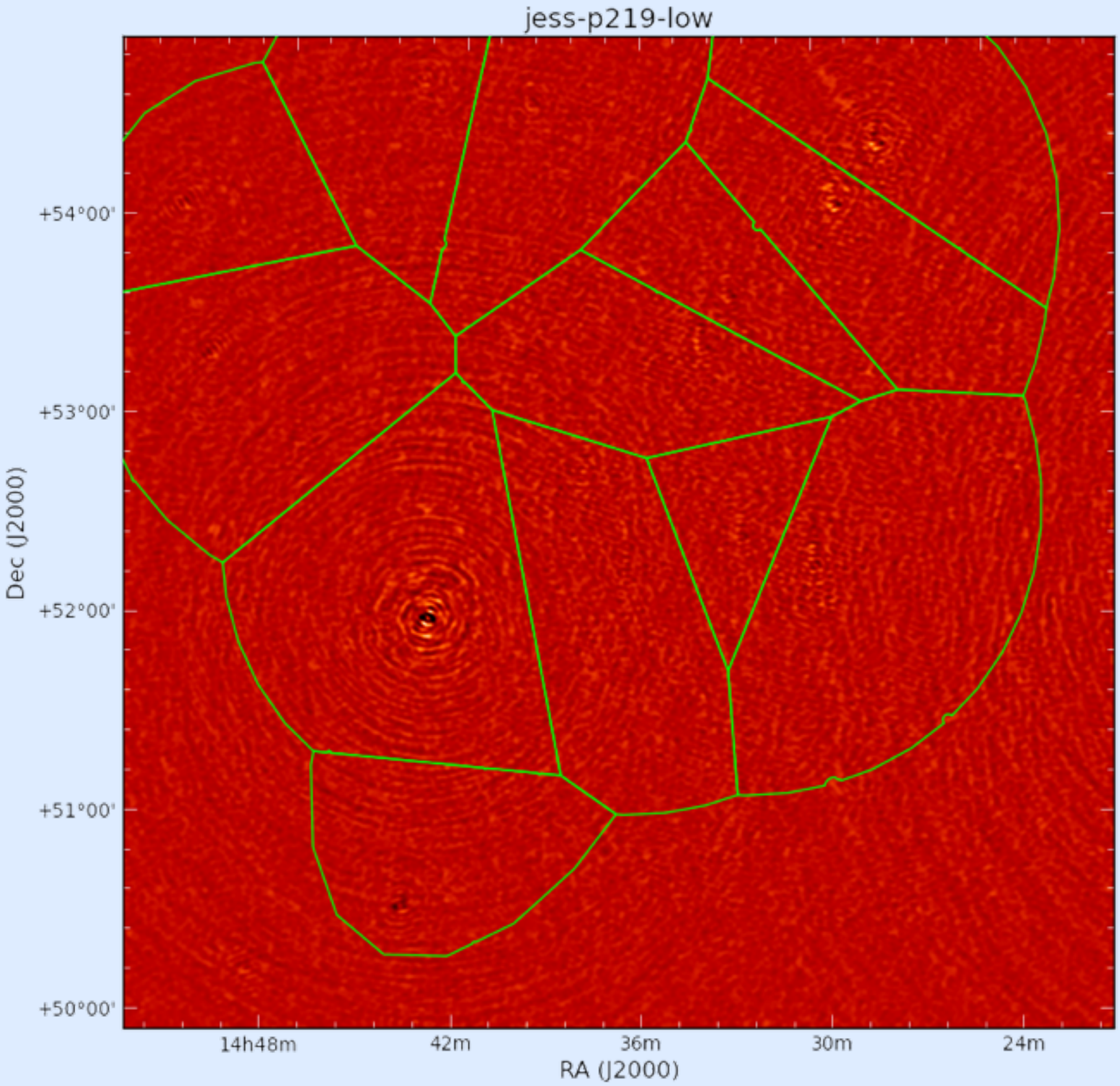

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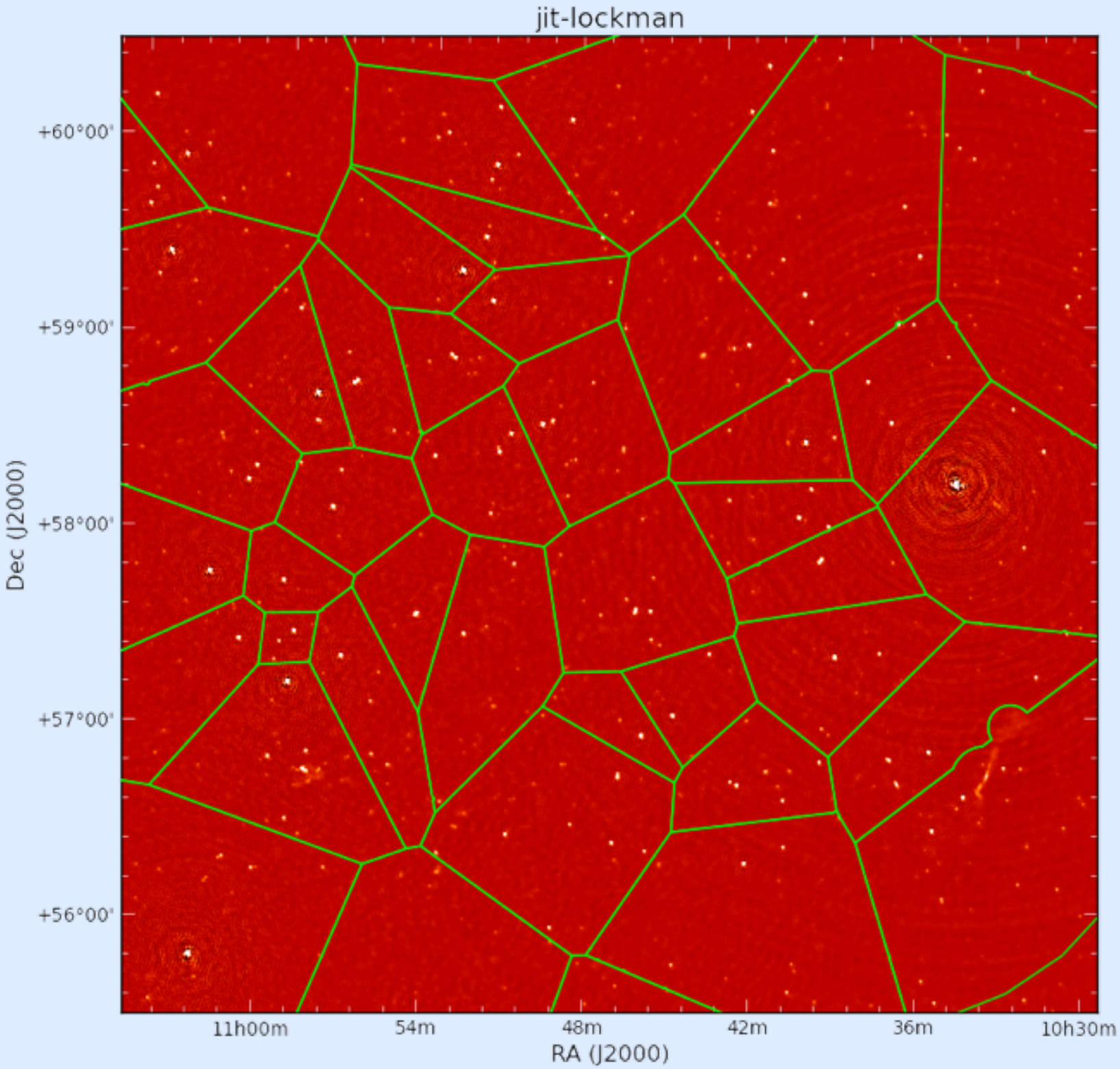

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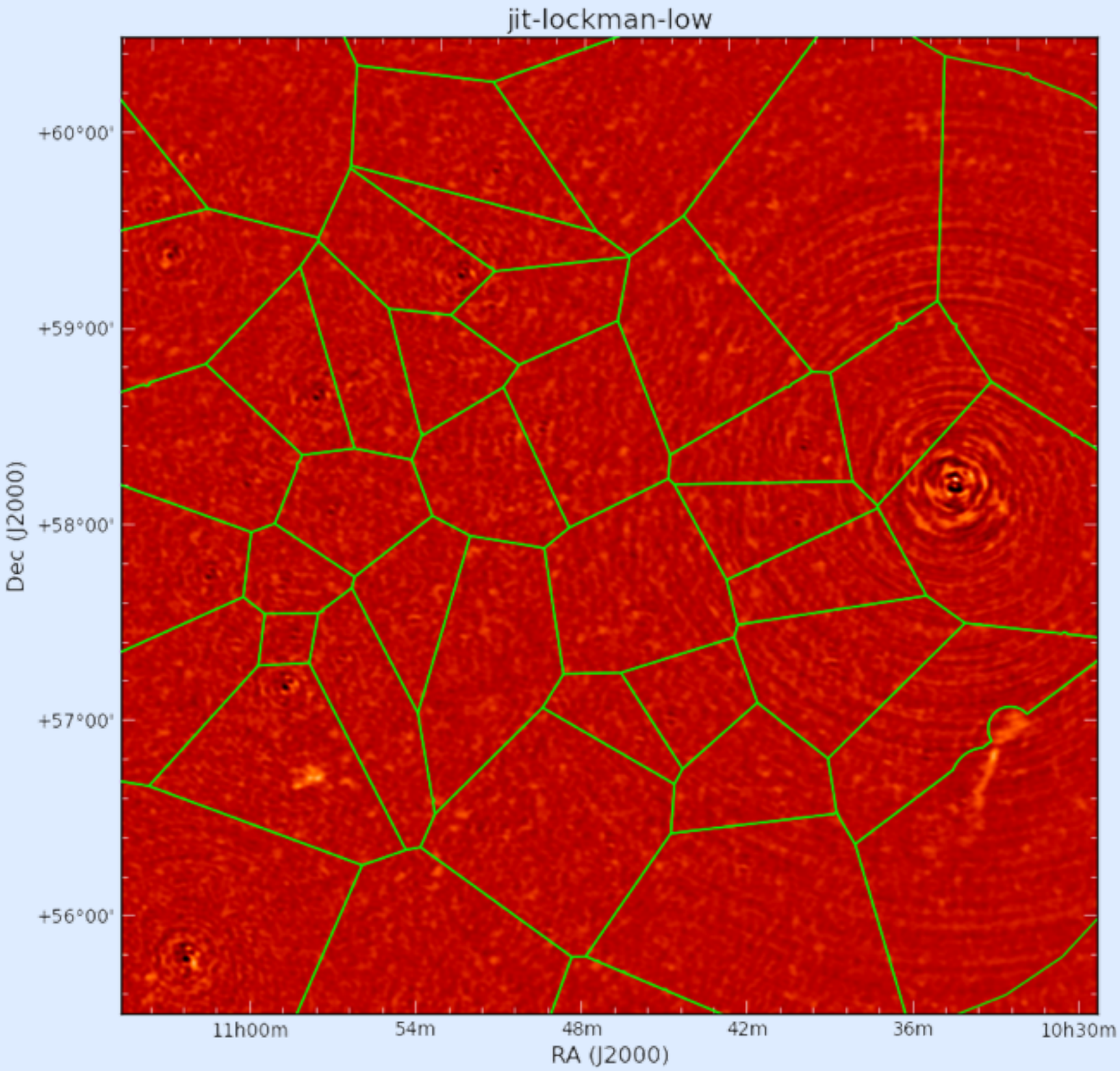
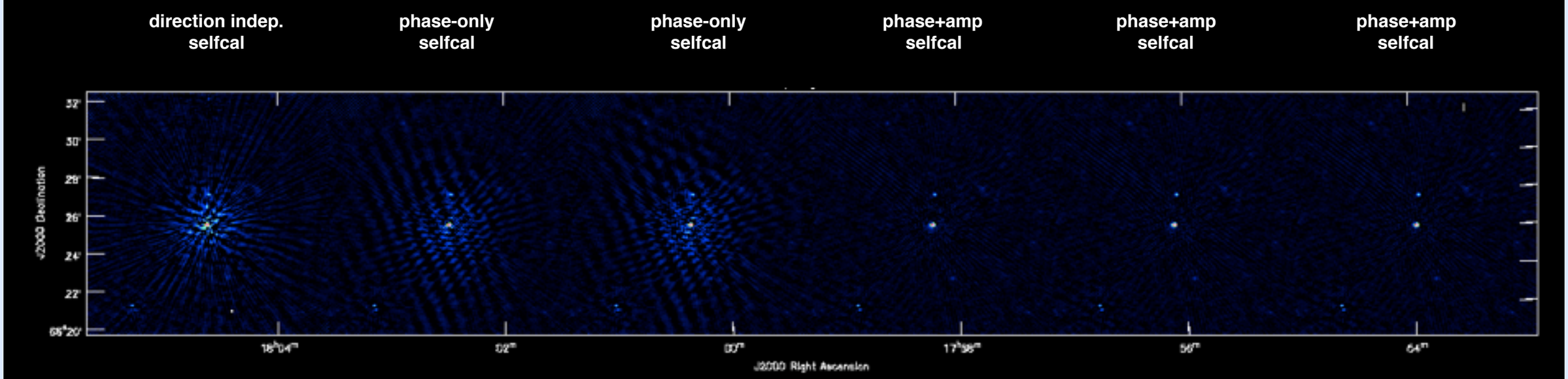


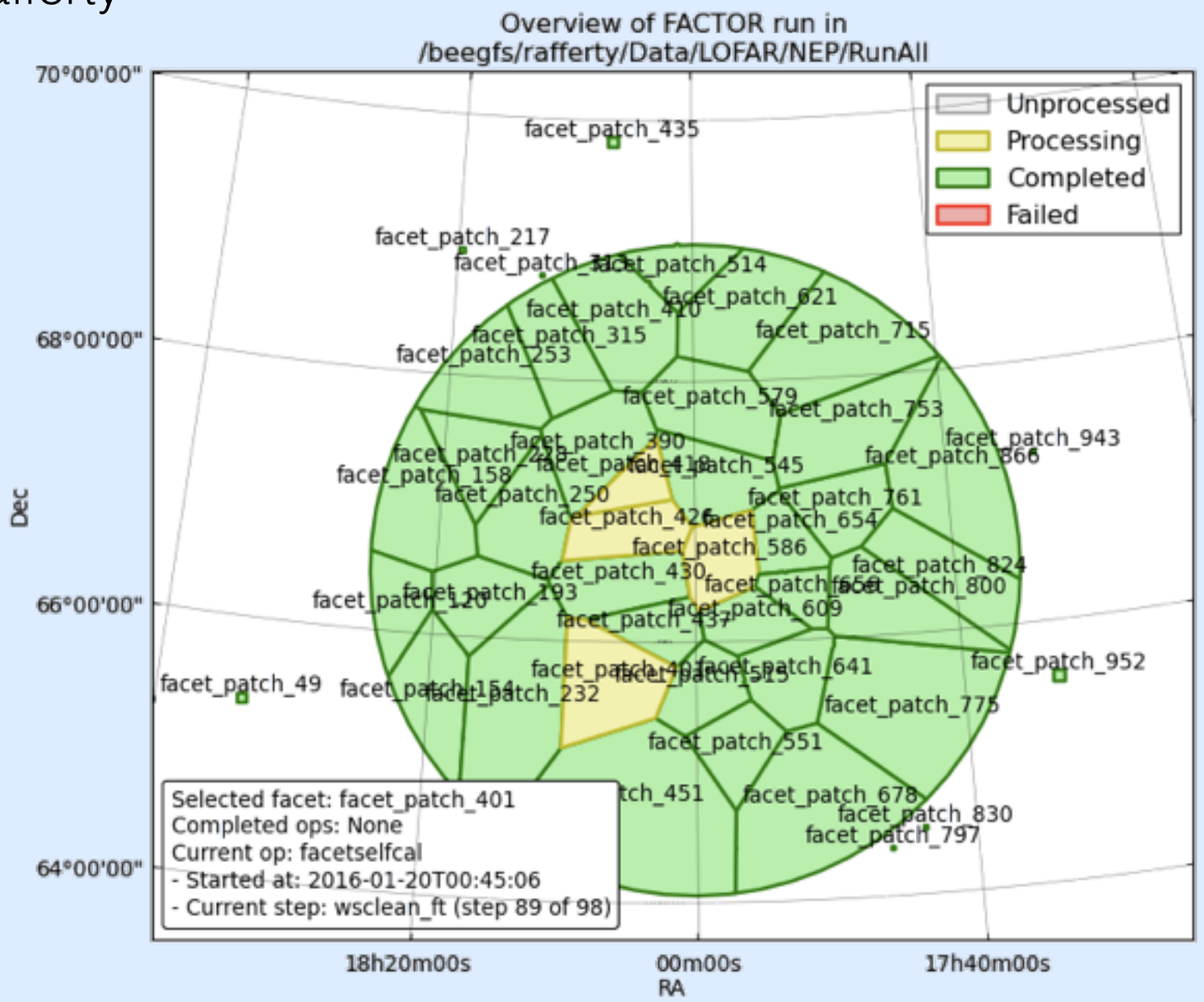
Facet selfcal (David Rafferty)

- Fully automated run of Factor on NEP field (228 subbands)
- Typical noise level ~ 200 μJy/beam



Monitoring Factor Processing

Tool by David Rafferty



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