

WSRT with BBS

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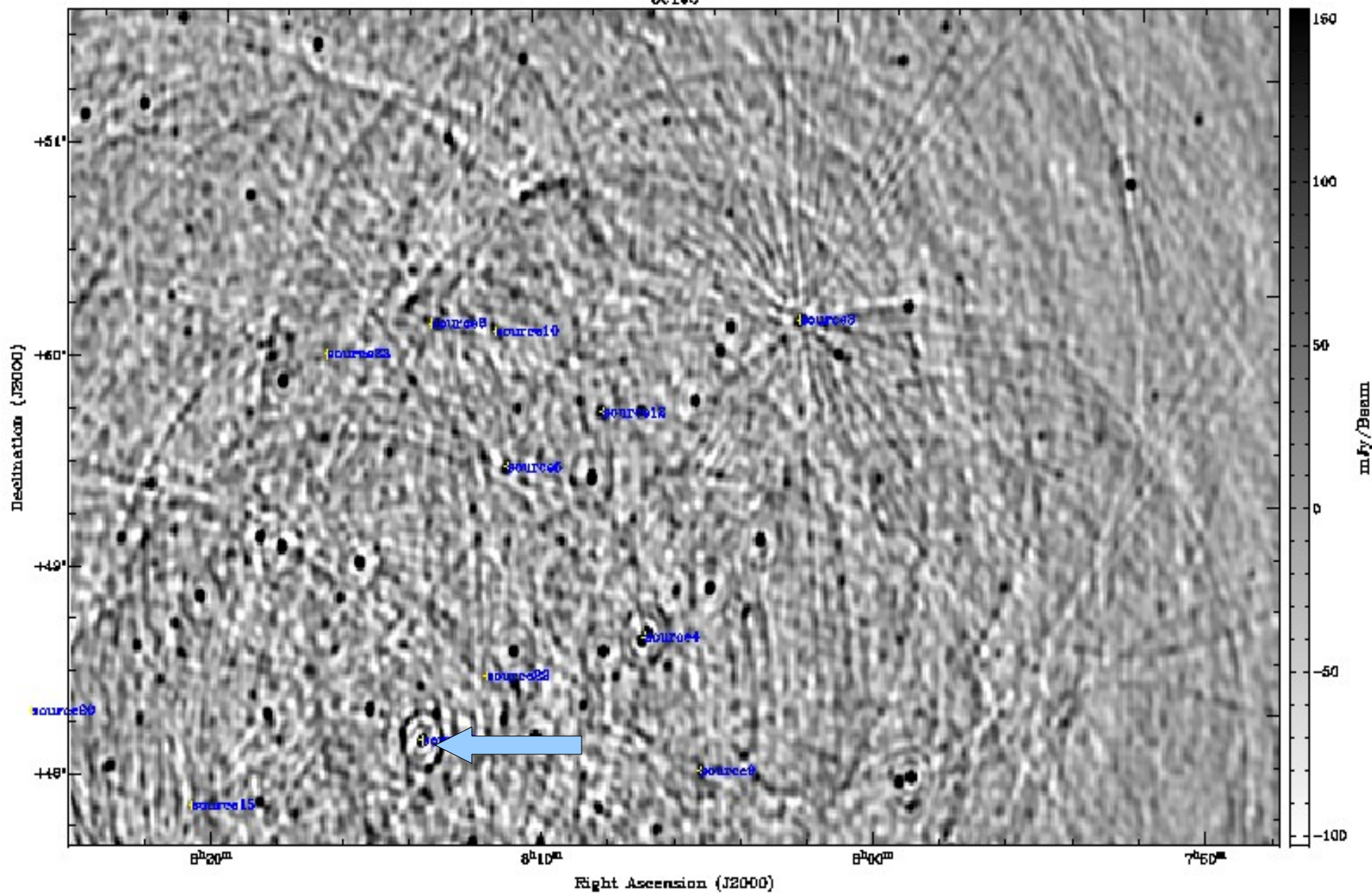
J. v. Zwieten

Westerbork observations of the 3C196 region

- Coordinates: RA=8^h 13^m 36^s.05 DEC=48°13'02".26
- Observing frequencies: 8 contiguous spectral windows of 2.5 MHz each (139.3, 141.5, 143.7, 145.9, 148.1, 150.3, 152.5 154.7 MHz), in order to produce a redshift cube
- Frequency resolution: 4.9 KHz (9.8 KHz after hanning taper)
- Time resolution: 10 sec integration
- Observing time: 6x12^h in November-December 2007 (mostly night time)
- Theoretical expected noise: ~0.5-0.6 mJy (corresponding to ~3 K for the full angular resolution of ~ 2 arcmin)

- Start from calibrated/flagged data
(G. Bernardi using AIPS++)
- Split data of 1 SPW into 8 subsets of 32 channels
- Run 8 processes in parallel use globalsolver to combine all channels in the fit
- Sky model from images (aips++ findsources)
 - j2convert needed
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3C196



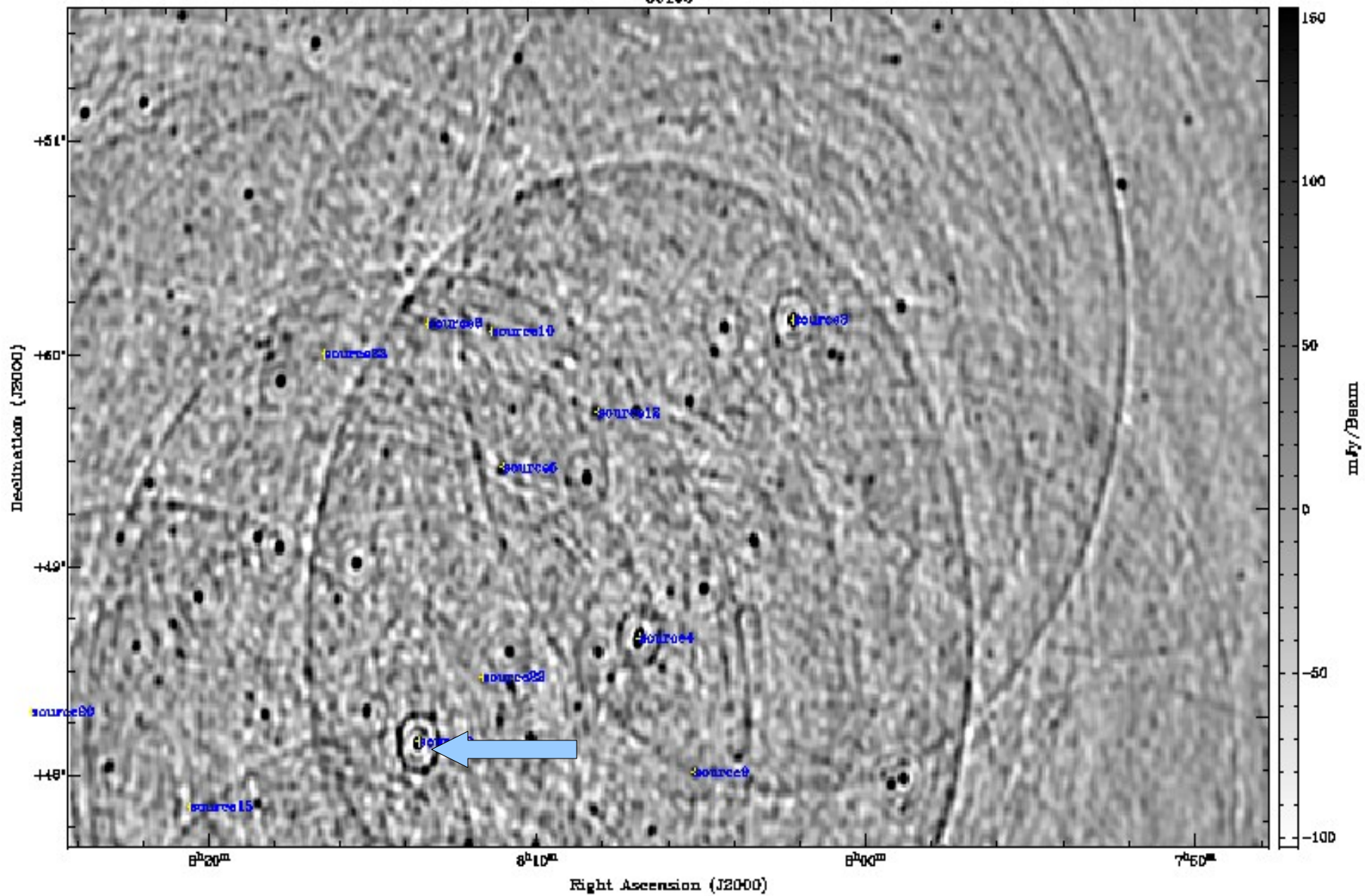
source1

source7

Ionosphere corrections

- Directional phases:
 - ~25 sources in model
 - Solve for independent phases in directions of 4 brightest
 - Subtract all sources, use corrupted model for the 4 brightest sources (no interpolation)
 - Independent fit per timeslot
 - All channels combined (global solver test)

3C196



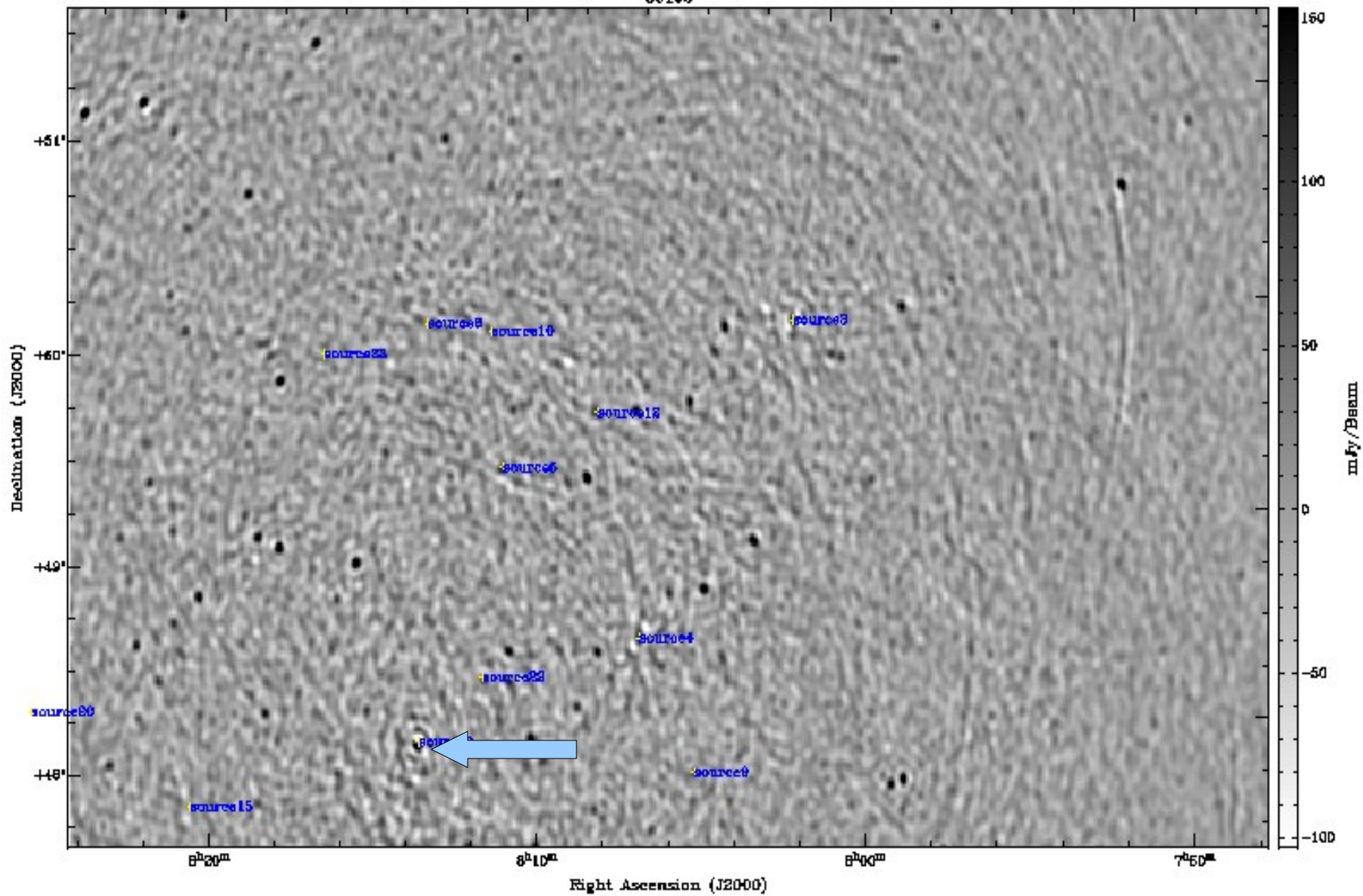
source1

source7

Update Sky model

- Start from data with corrupted model subtracted
- Add uncorrupted model
- Find sources: update sky model
- Repeat directional phase fitting with updated model
 - (just subtracting new model with old phases not sufficient)

3C196



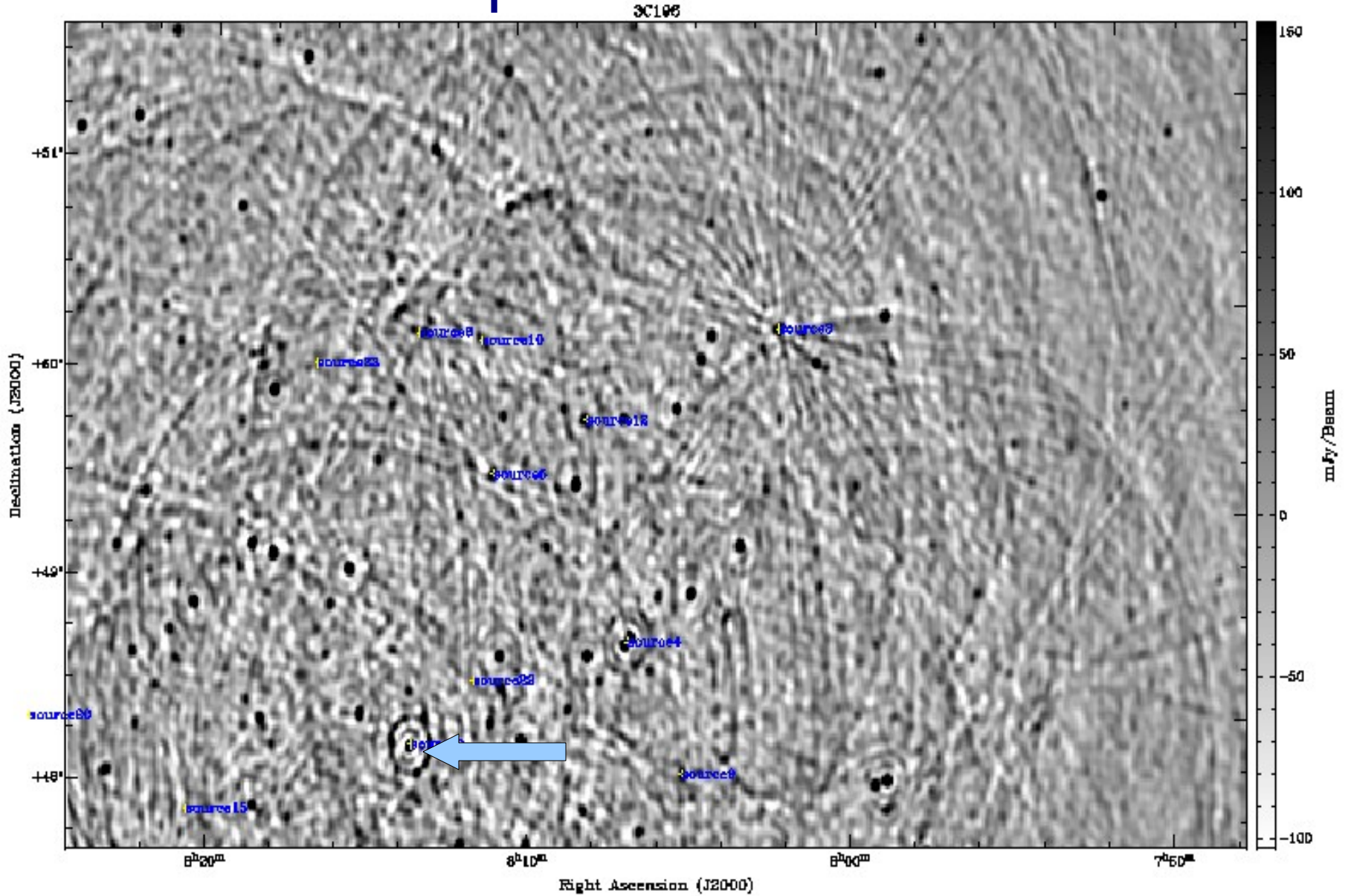
source1

source7

Simple MIM model

- 2 dimensional phases screen at fixed altitude of 300 km instead of independent directional phases
 - Solve directly on UV-data
 - 2 parameters : plane
 - 5 parameters : 2nd order
 - 8 parameters : 3rd order
- Include all 25 sources in model, subtract all sources with their own phase correction
 - Independent fit per timeslot
 - All channels combined (global solver test)
 - NO updated model (yet)

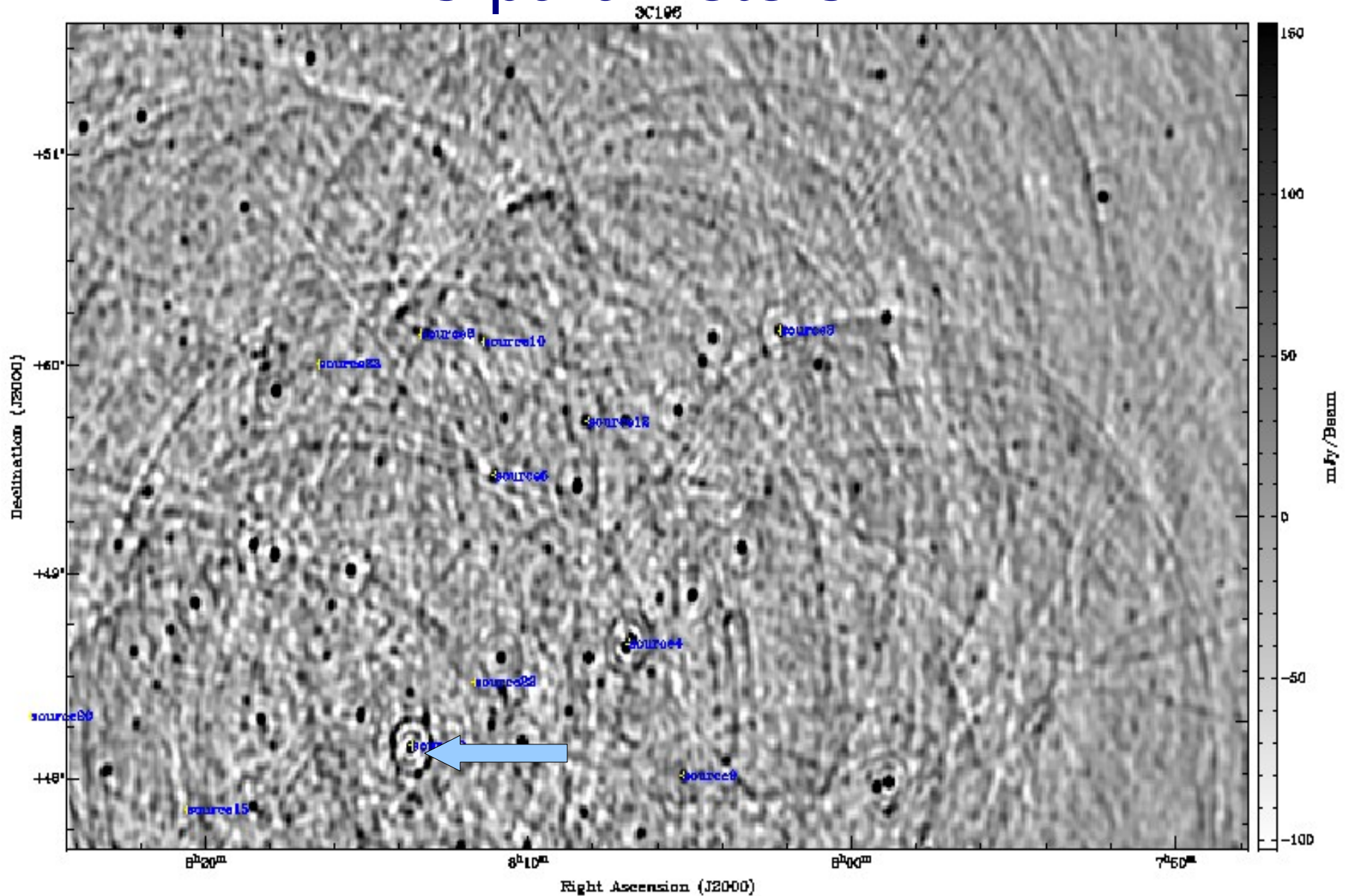
2 parameters



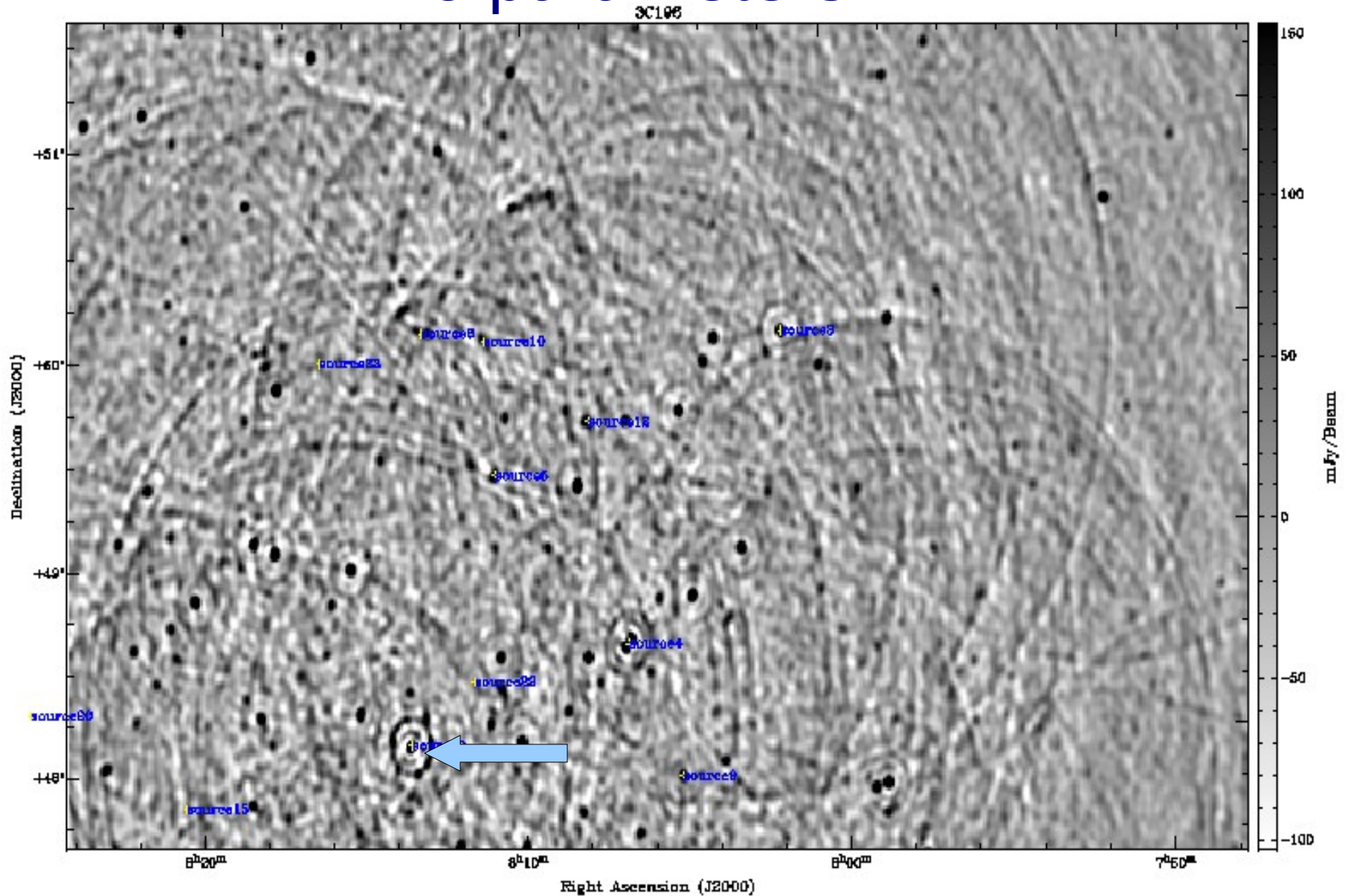
source 1

source 7

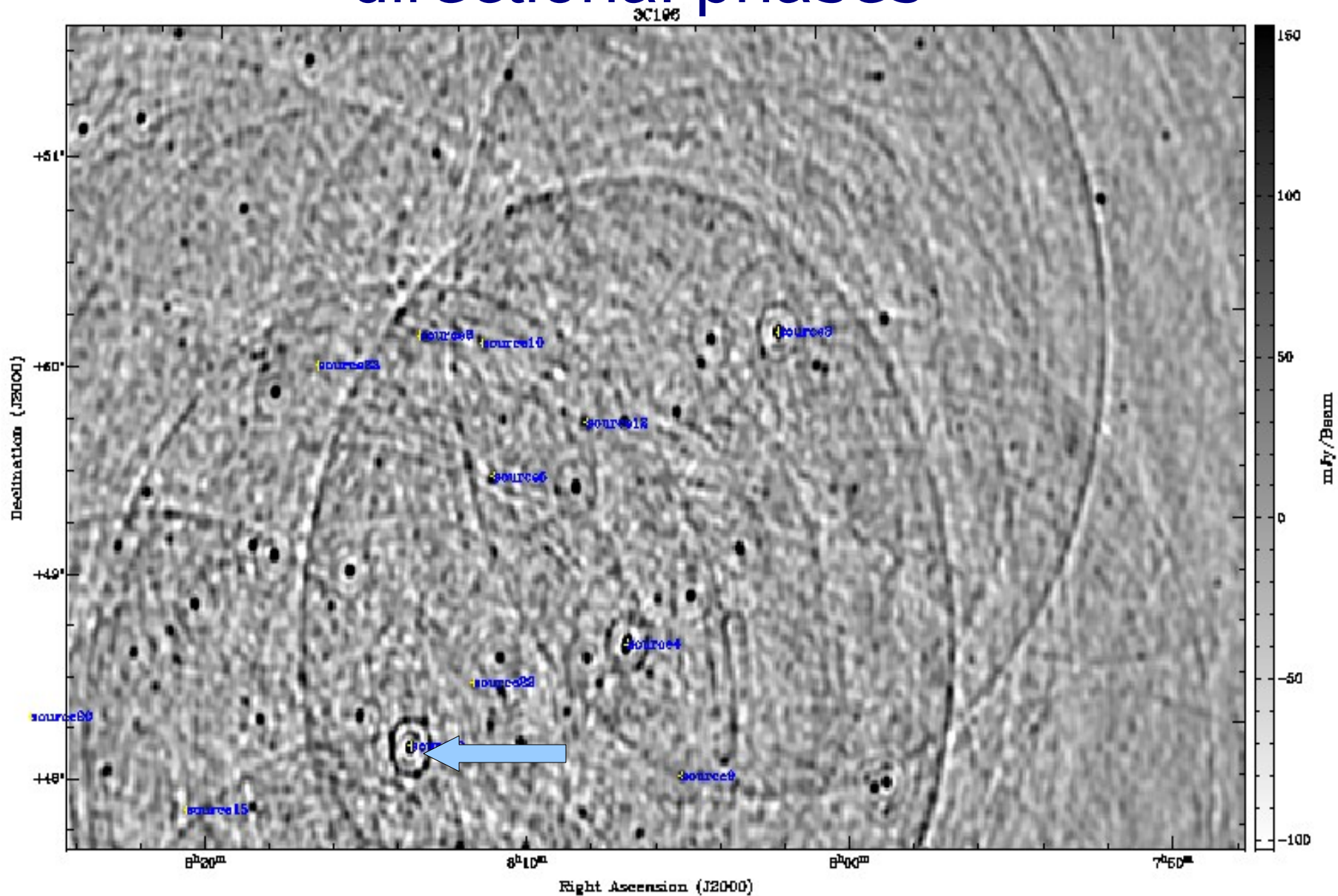
5 parameters



8 parameters



directional phases



source1

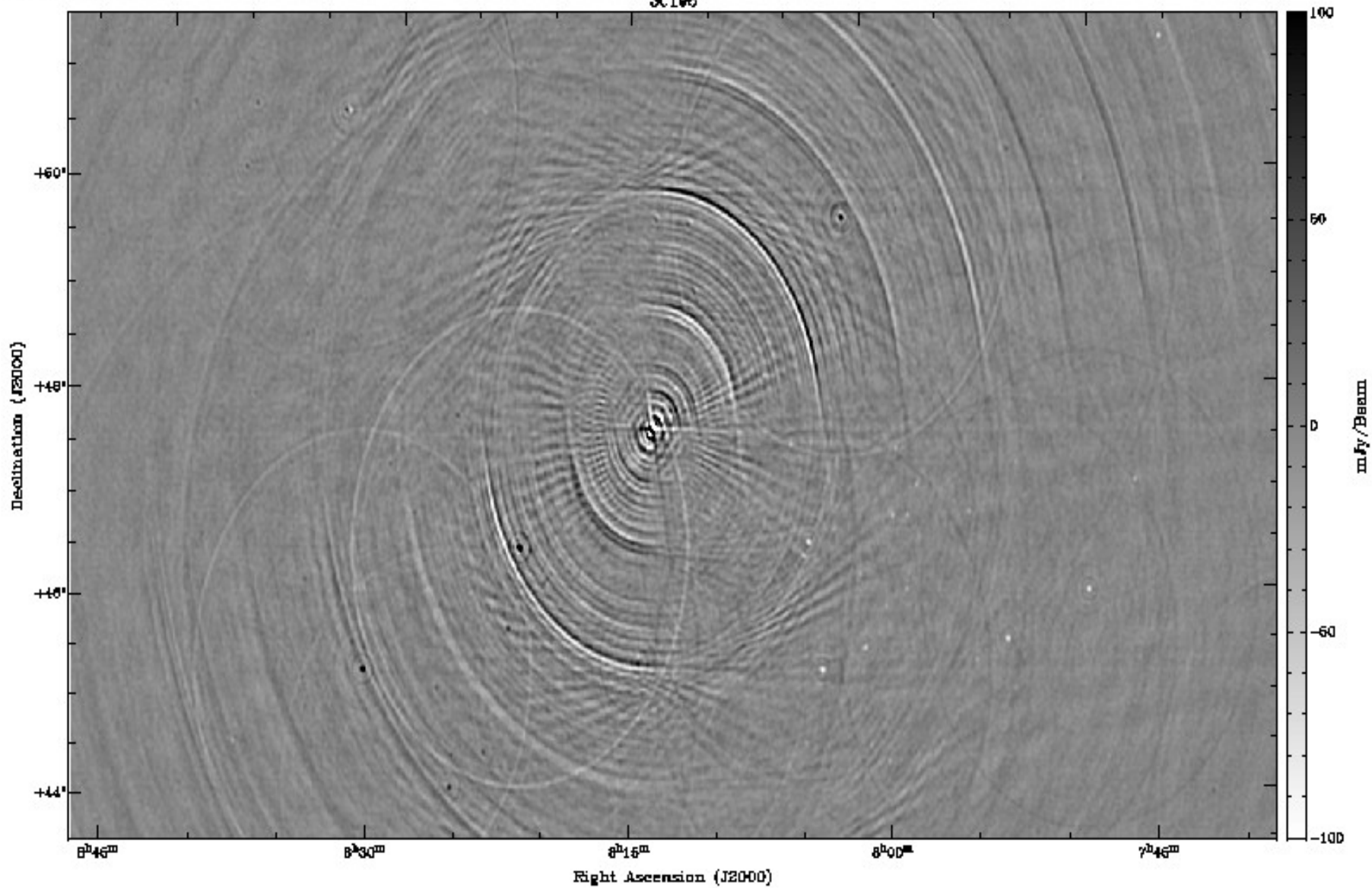
source7

Leakage test

- Solve for off-diagonal elements of Gain matrix
- Start from calibrated data again
- 30 timeslots combined
- Independent per channel
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STOKES: 3.000000e+00

3C195

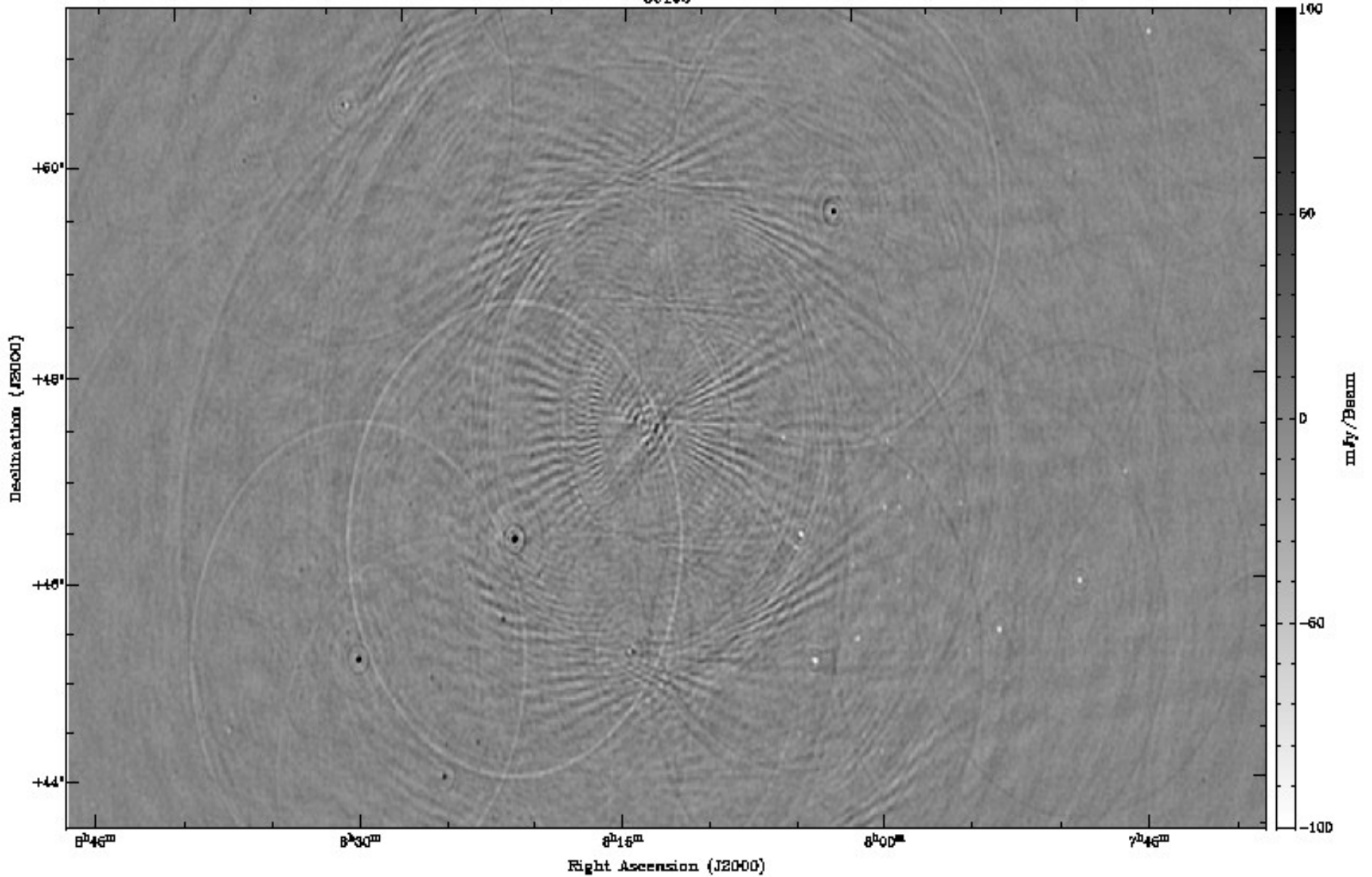


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solved off diagonal elements

STOKES: 3.000000e+00

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Next steps

- Leakage calibration on all data
- Ionosphere calibration on all data
- Investigate MIM-models
- BBS:
 - Solution based flagging
 - VDS-files + tools for running on cluster