Results from the DRAO ST observations of the SPARCS Northern Reference Field

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Overview

Introduction

- EMU/POSSUM + WODAN
- Reference Fields

The DRAO Observations

- DRAO Synthesis Telescope
- The Reference Field Project

Preliminary Results

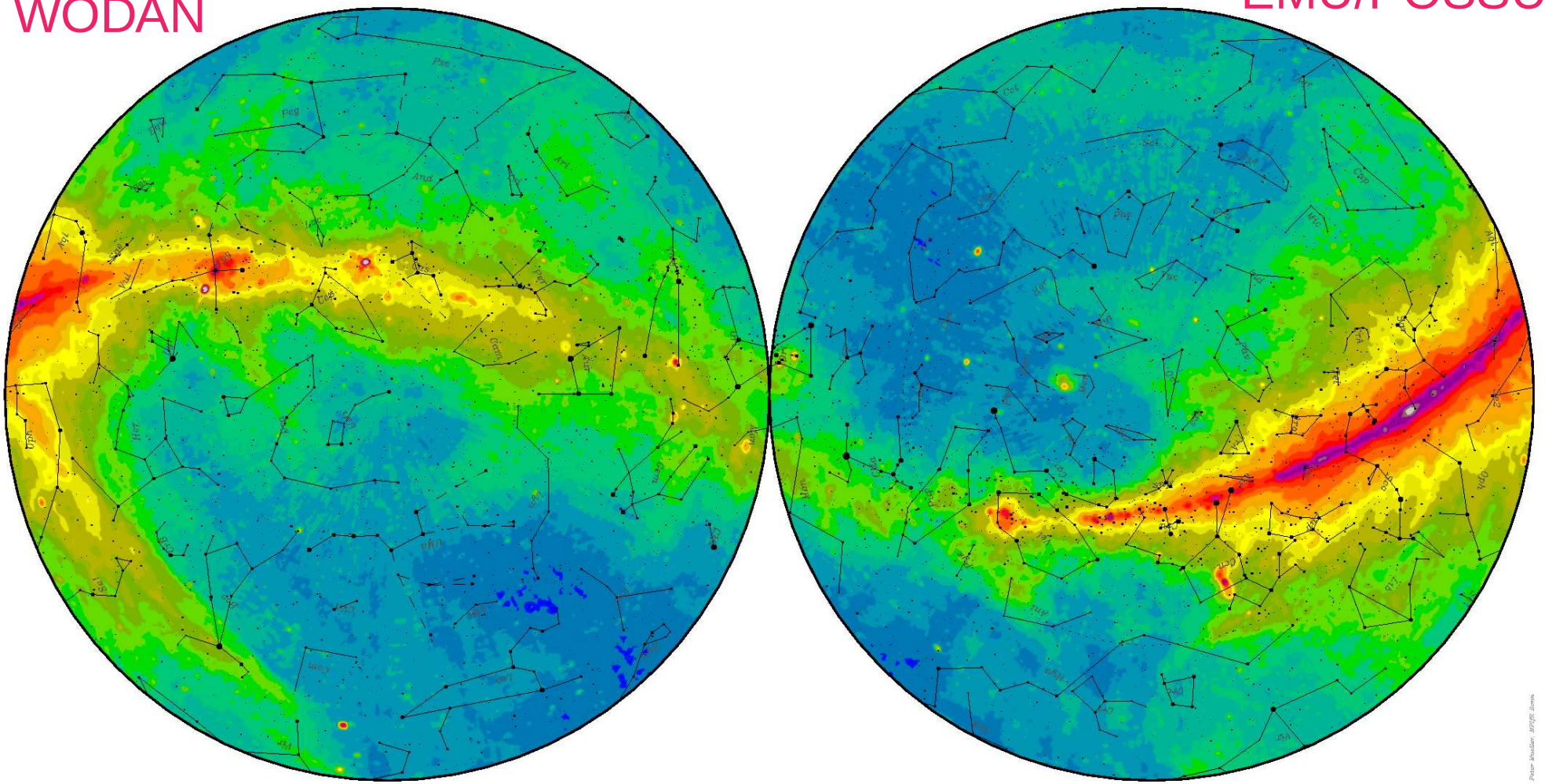
Summary & Outlook

The Radio Sky

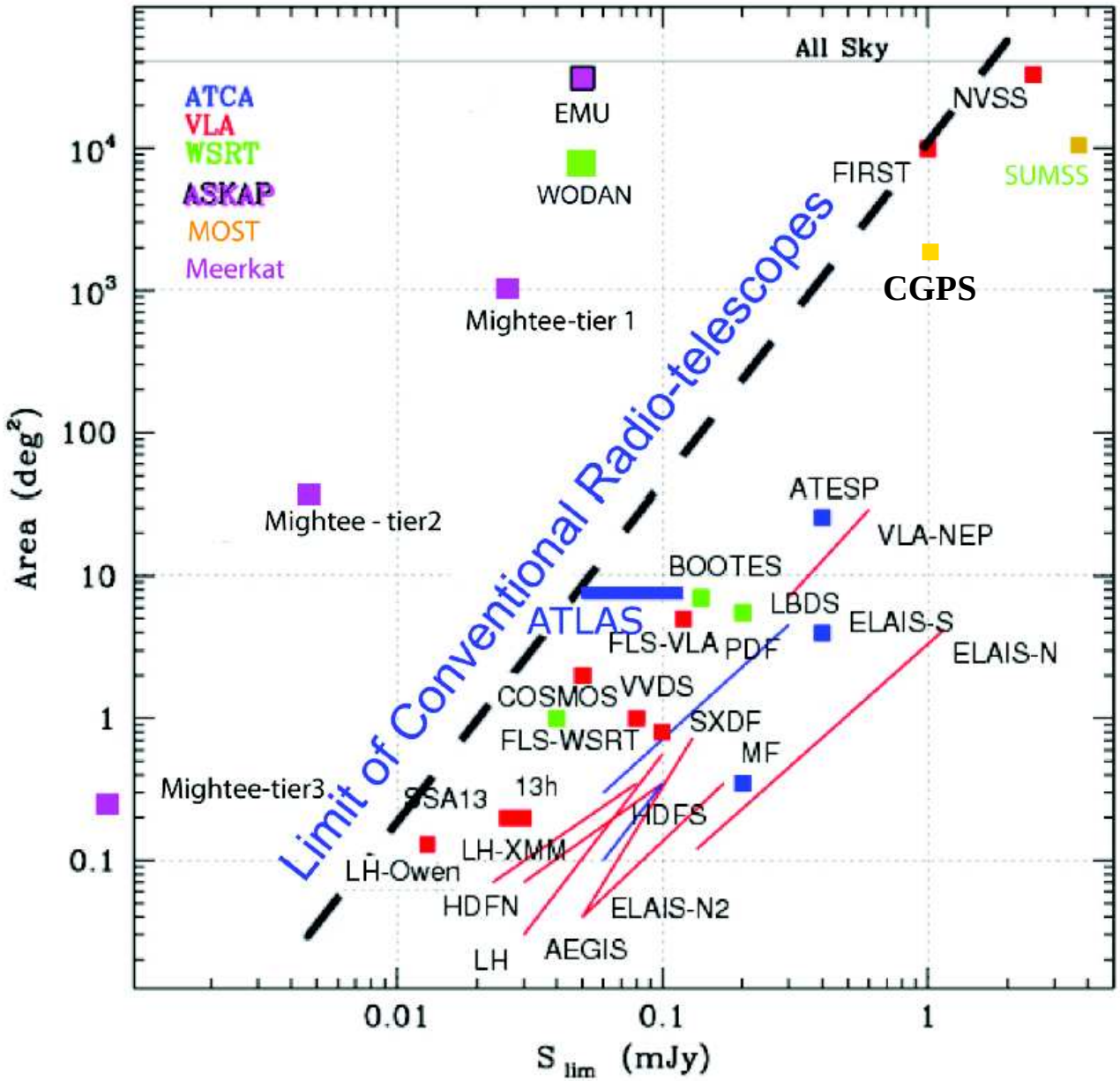
Haslam et al, 1982

WODAN

EMU/POSSUM



EMU/POSSUM + WODAN



The Reference Fields

The Need for Uniformity between EMU and WODAN

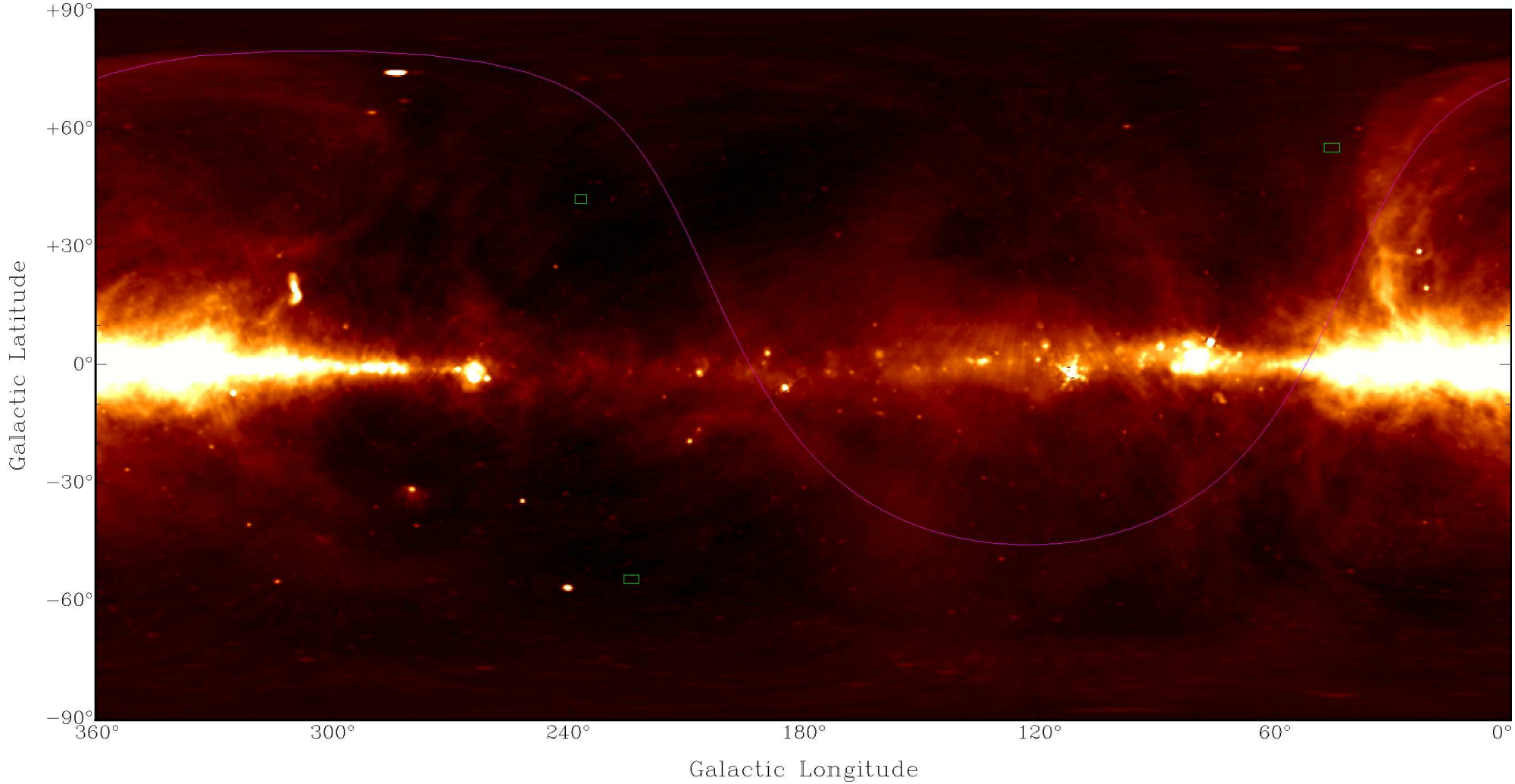
- flux calibration scale the same
- large overlap
- comparison of sources at all flux density scales
- polarization characteristics

For this purpose SPARCS initiated a series of observations of three reference fields at Declinations: $-29°$, $0°$, and $+29°$.

The Reference Fields

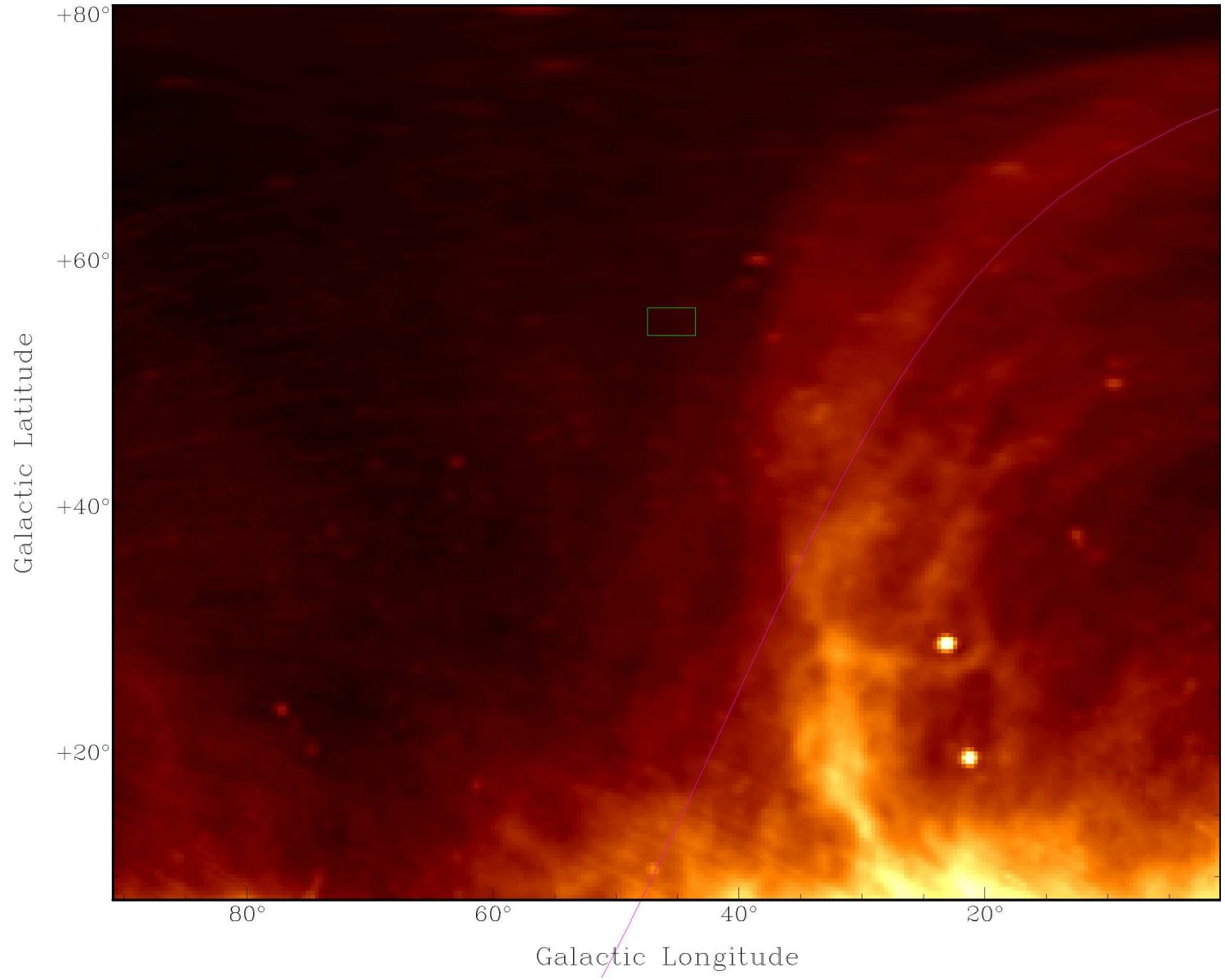
$10^h00^m\ +02°30'$

$15^h30^m\ +29°00'$



$03^h32^m\ -28°00'$

The Reference Fields



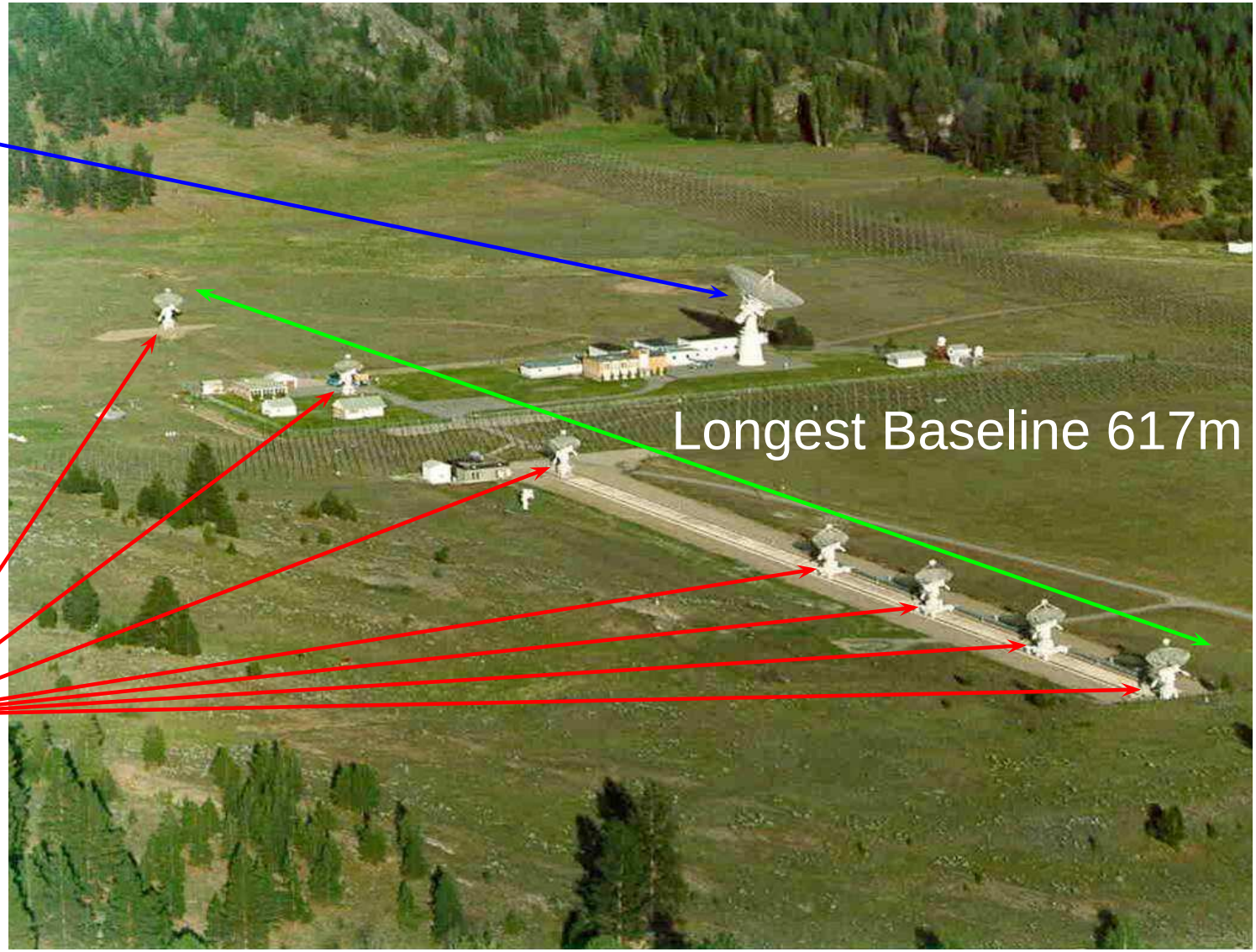
Team Members

- **Matt Bonnyman** (Co-op student)
  (University of Victoria, DRAO)
- **Dave DelRizzo**
  (DRAO)
- **Roland Kothes**
  (DRAO)
- **Phil Kronberg**
  (University of Toronto)
- **Tom Landecker**
  (DRAO)
- **Ray Norris**
  (Western Sydney University, CSIRO)
- **Michael Rupen**
  (DRAO)

The DRAO Synthesis Telescope

DRAO
26m Antenna

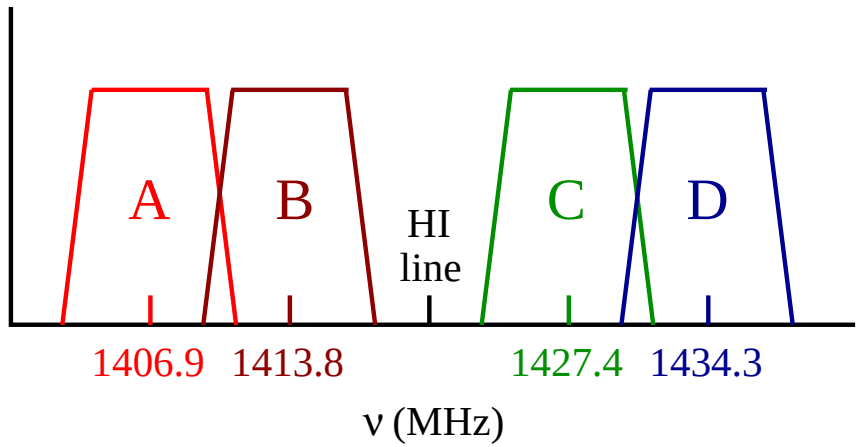
7 Antenna
East-West
Interferometer



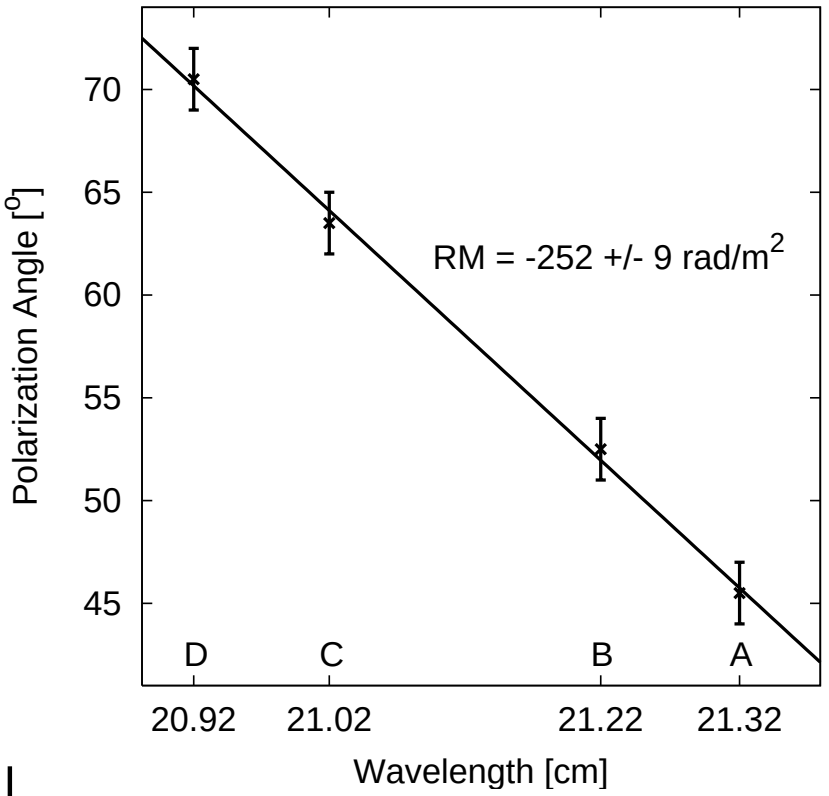
The DRAO Synthesis Telescope

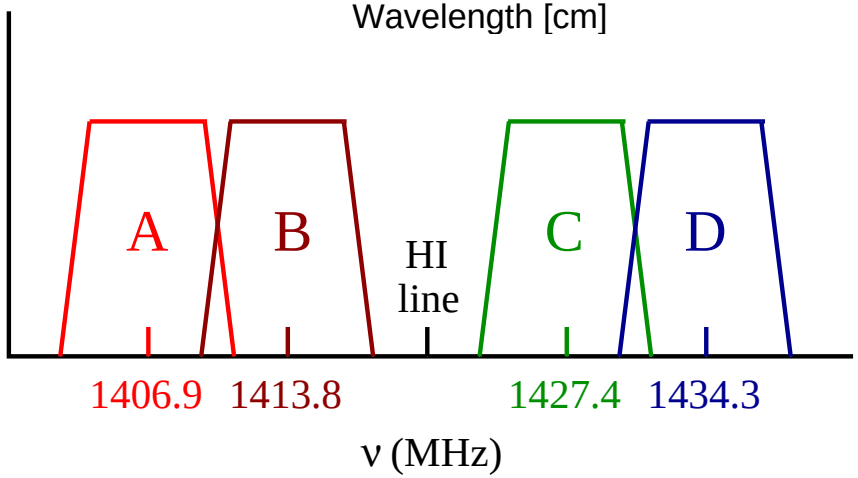
Frequency	RMS Noise	Resolution
408 MHz	3 mJy/beam	2.8’ $\times$ 2.8’ $cosec(\delta)$
1420 MHz	180 μJy/beam	48” $\times$ 48” $cosec(\delta)$
HI line	2 K T_B	59” $\times$ 59” $cosec(\delta)$

Frequency	Primary Beam FWHM
408 MHz	$332.1'$
1420 MHz	$107.2'$



Linear Polarization

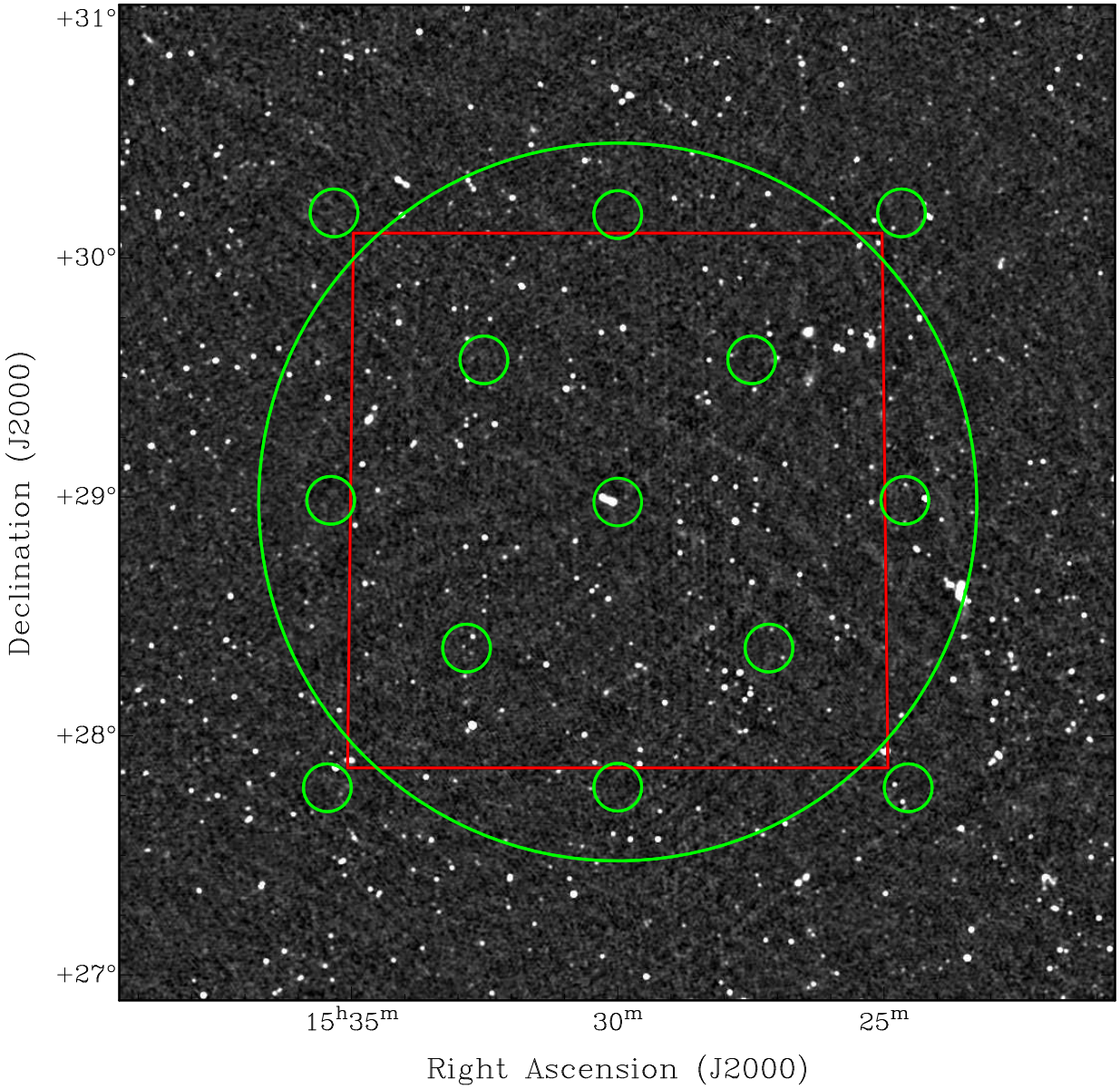




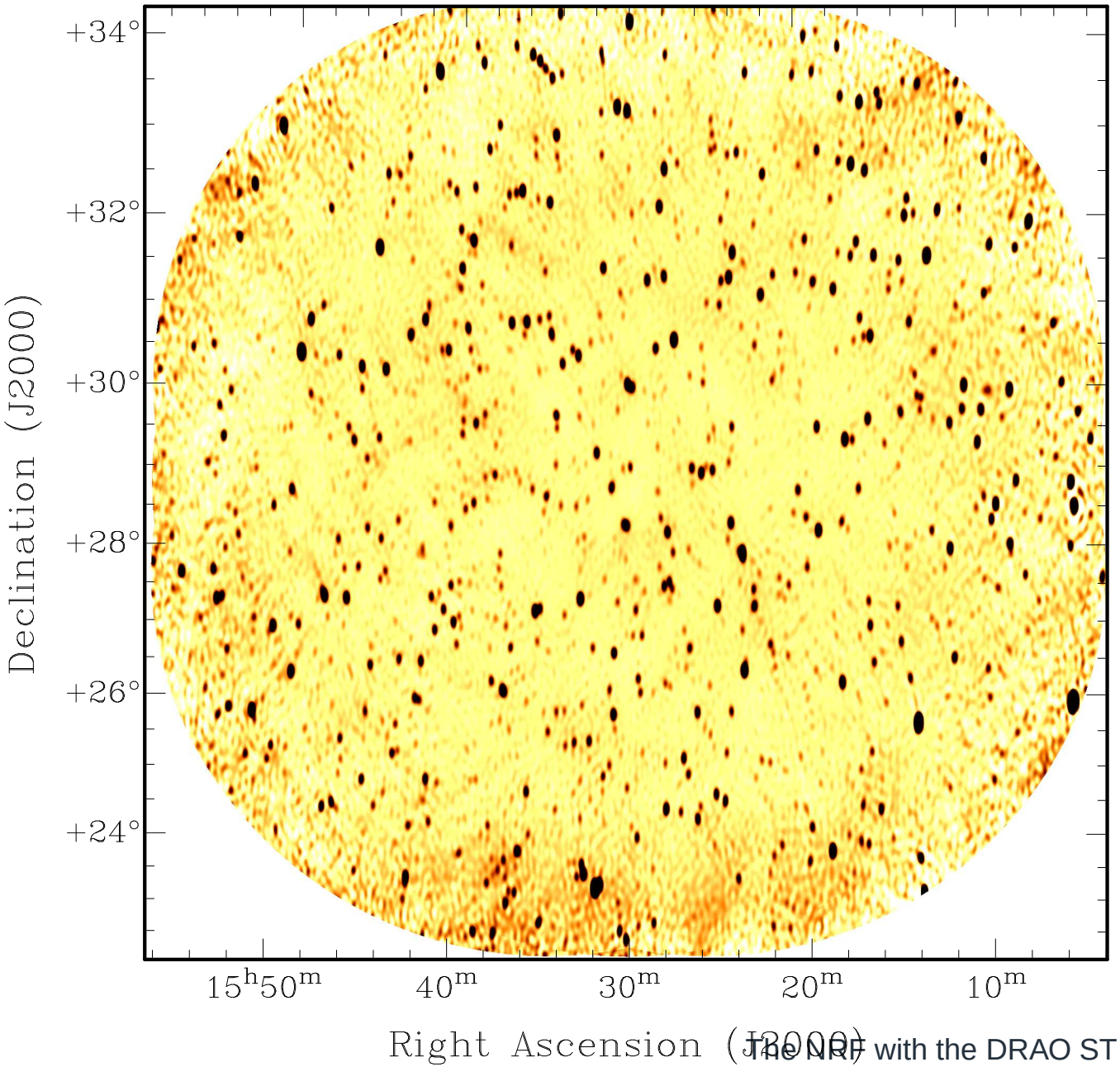
The Northern Reference Field with the DRAO ST

- Observation of 39 fields with the DRAO ST
- Provides Reference Field coverage at constant noise of 65 μJy.
- 2 year coverage of the hole field.
- 12 hour time resolution.
- Very precise polarization characteristics, including rotation measures.
- Full UV-coverage between 12.9 and 617 m.

DRAO ST Observations



408 MHz Stokes I



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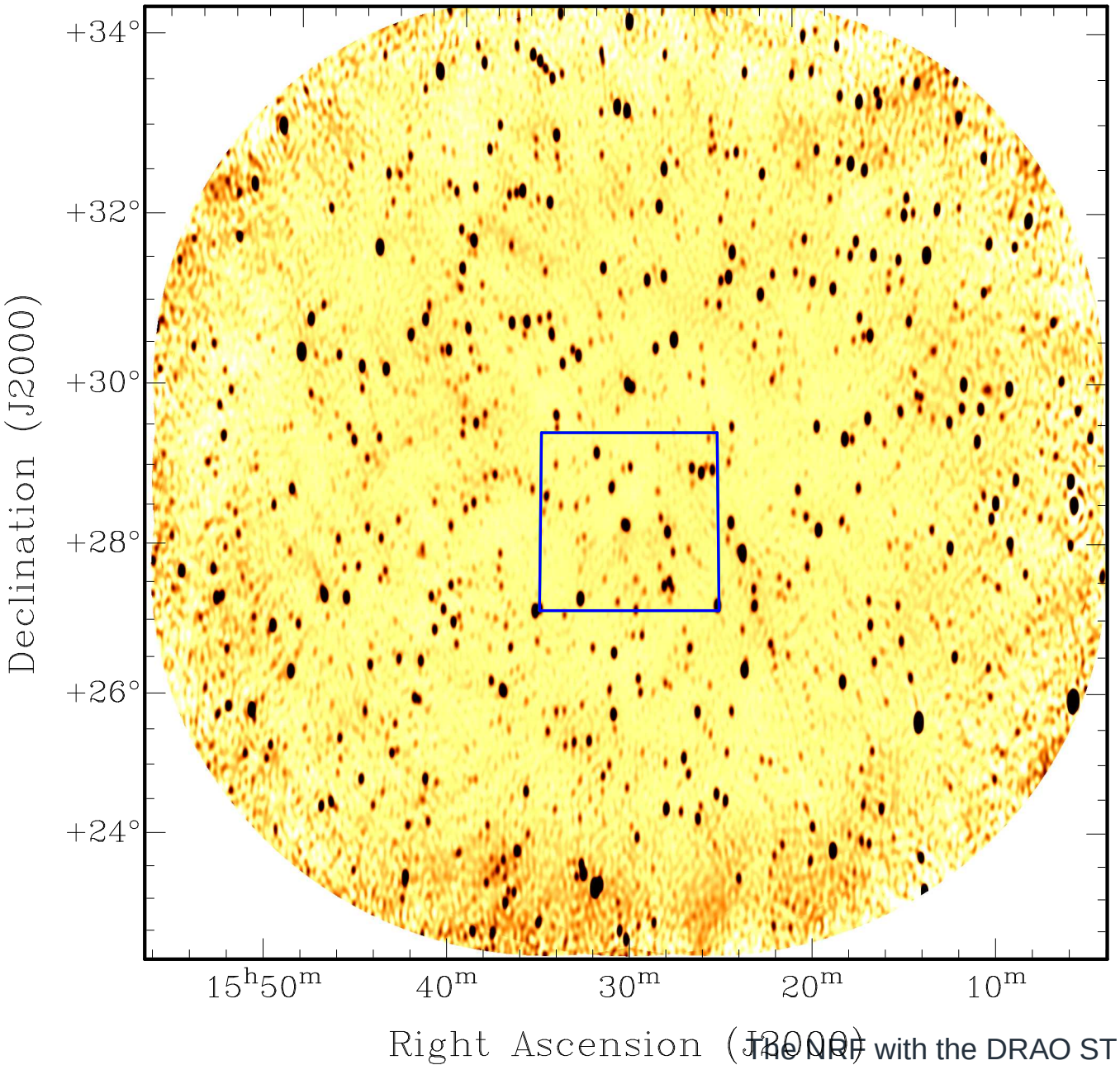

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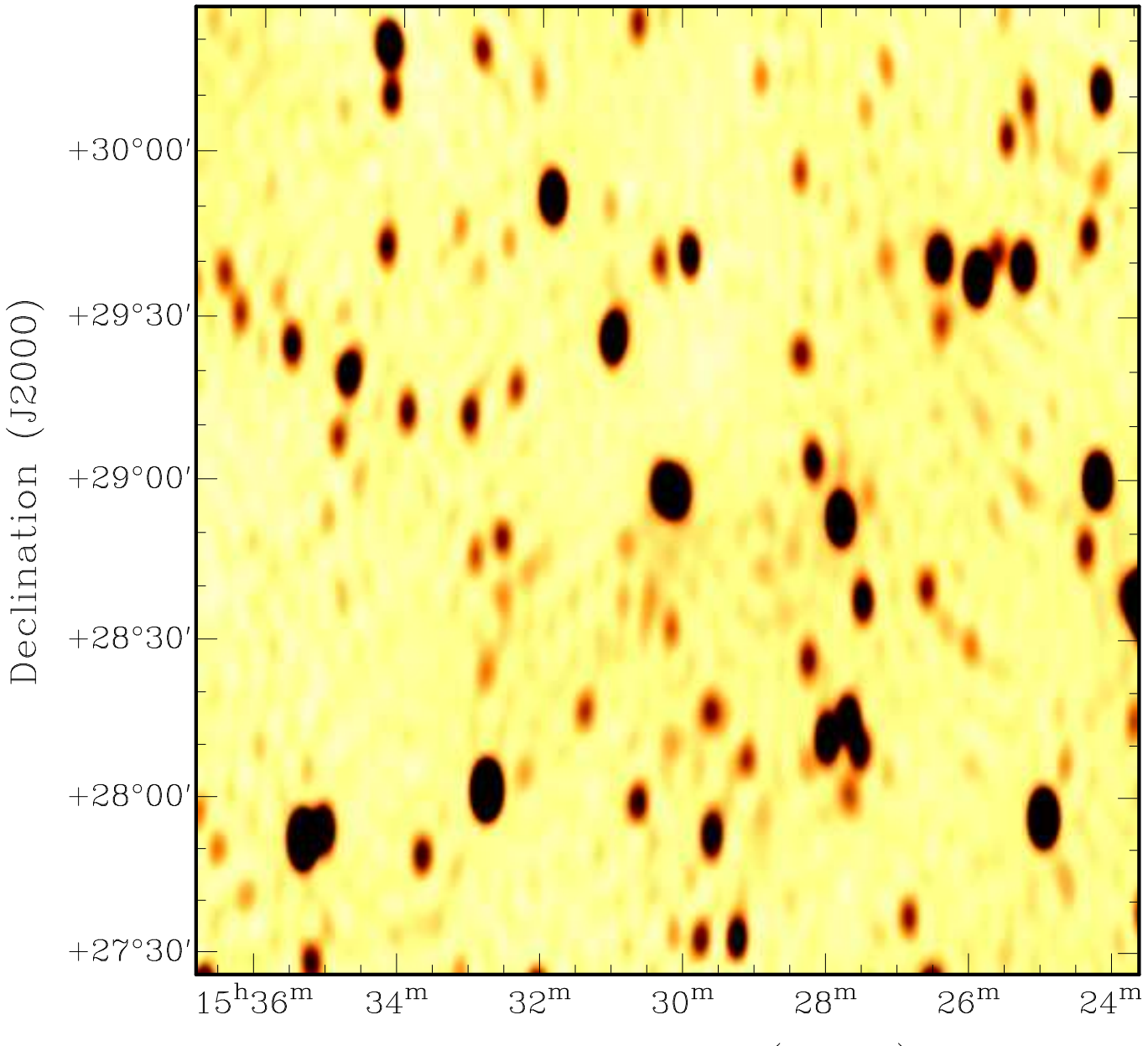
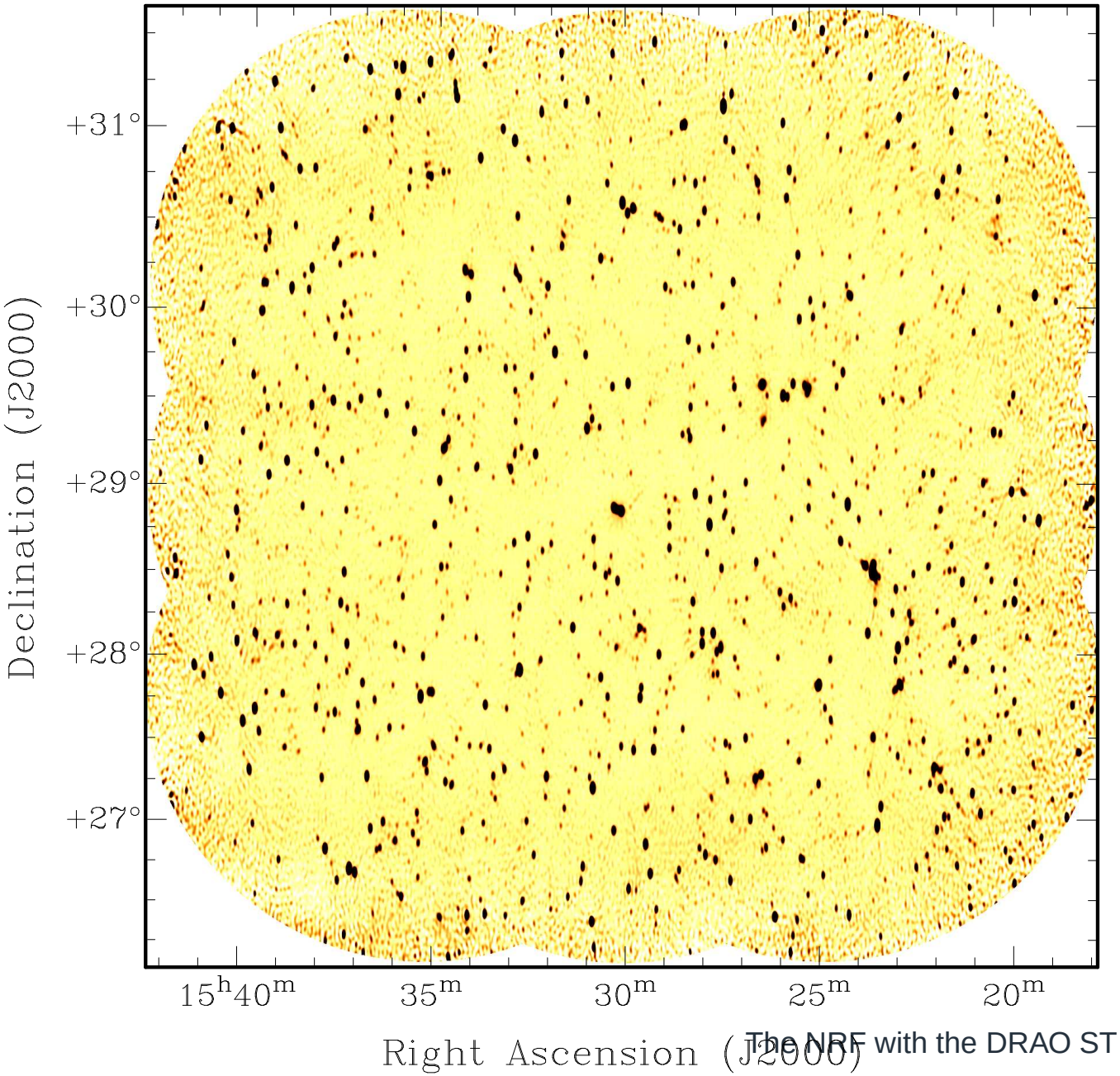


1420 MHz Stokes I



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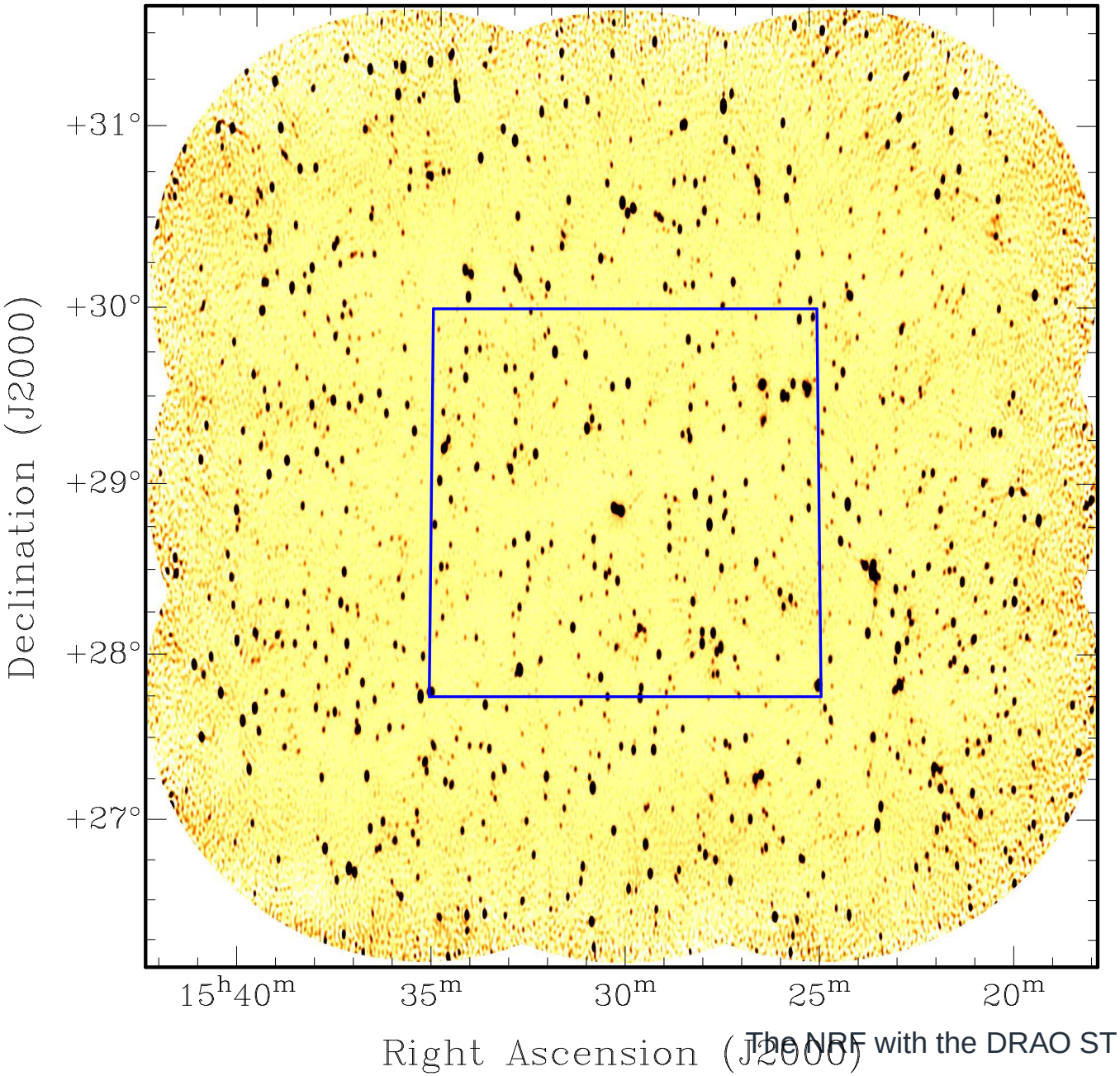

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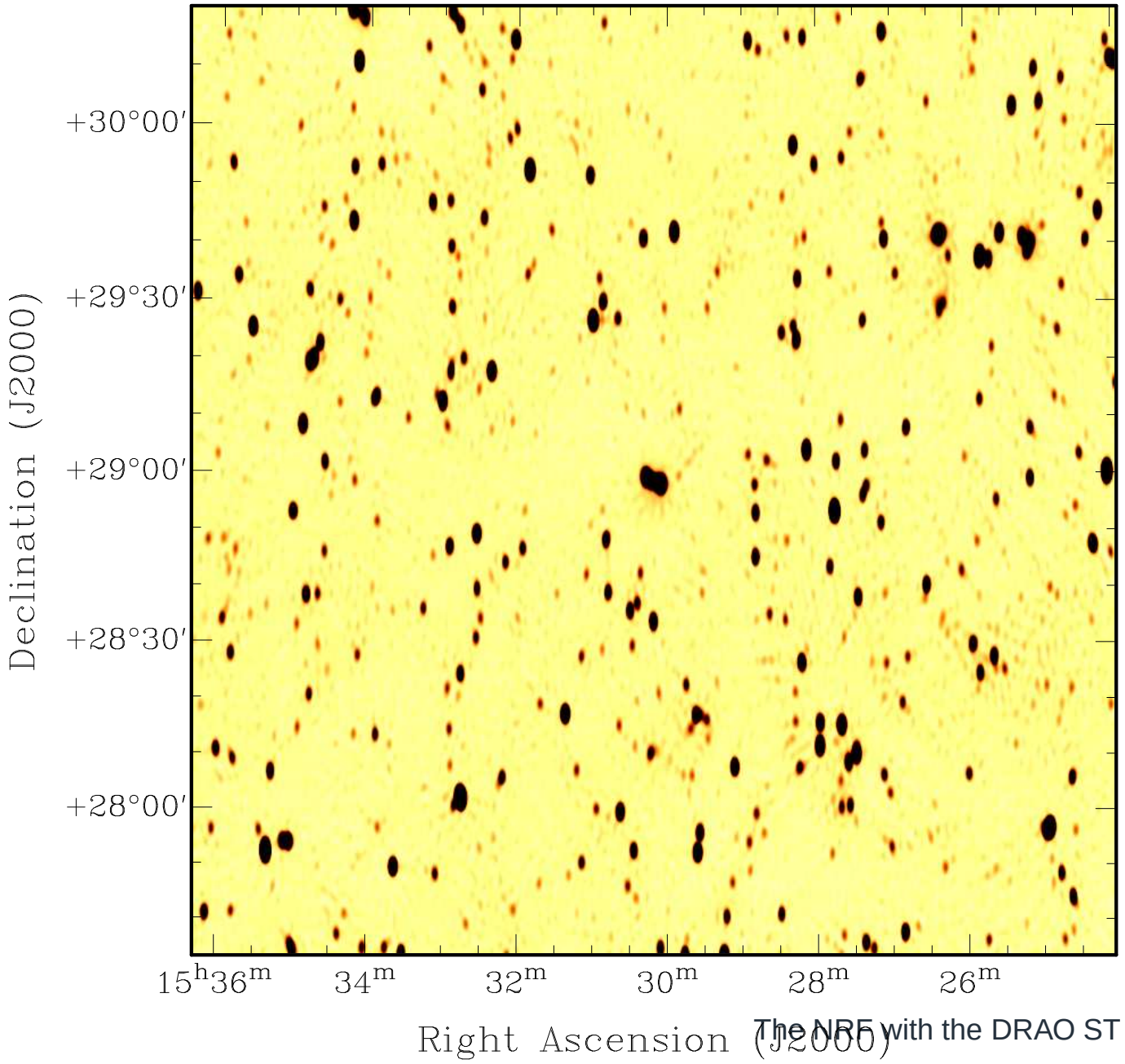
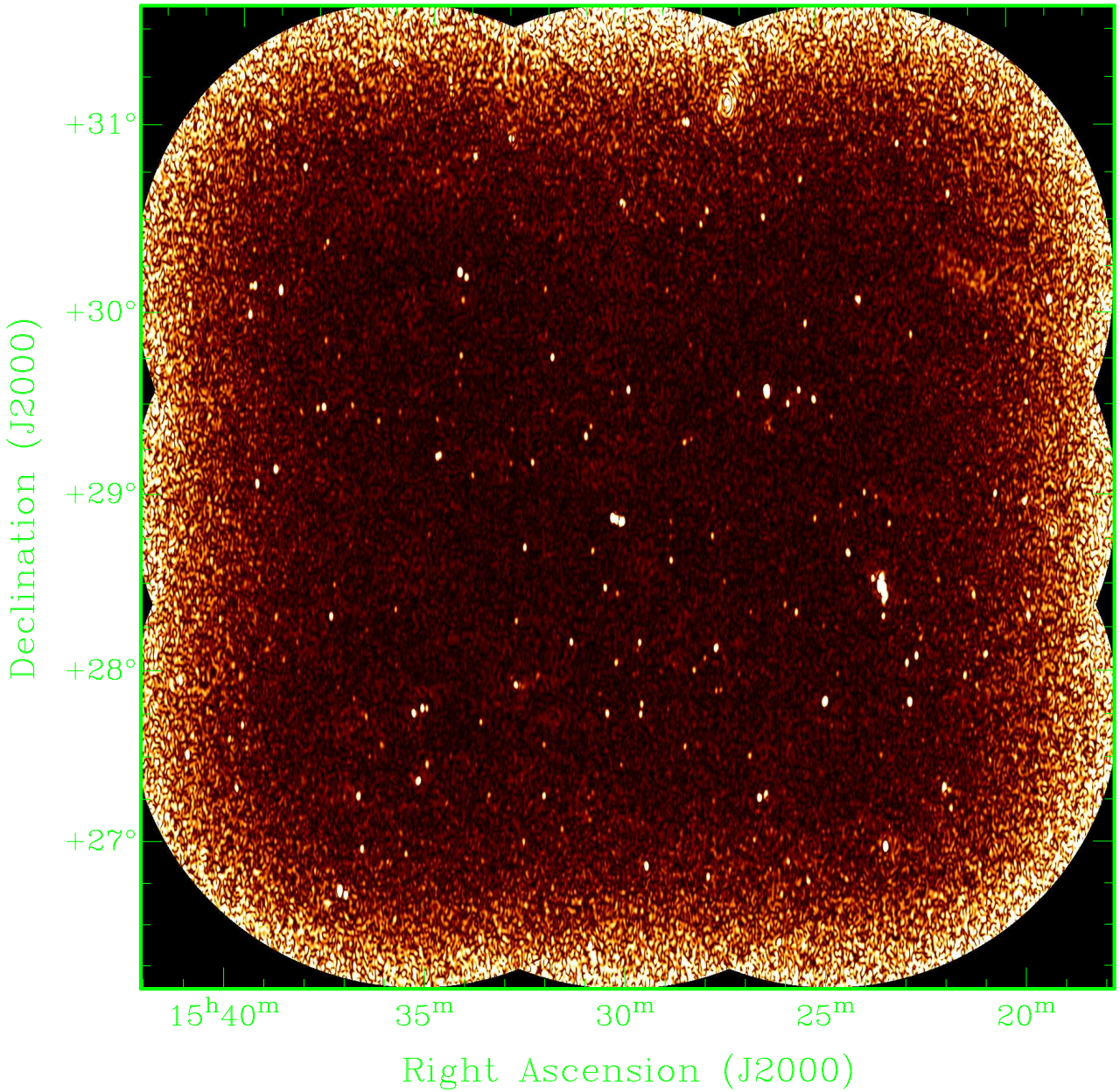
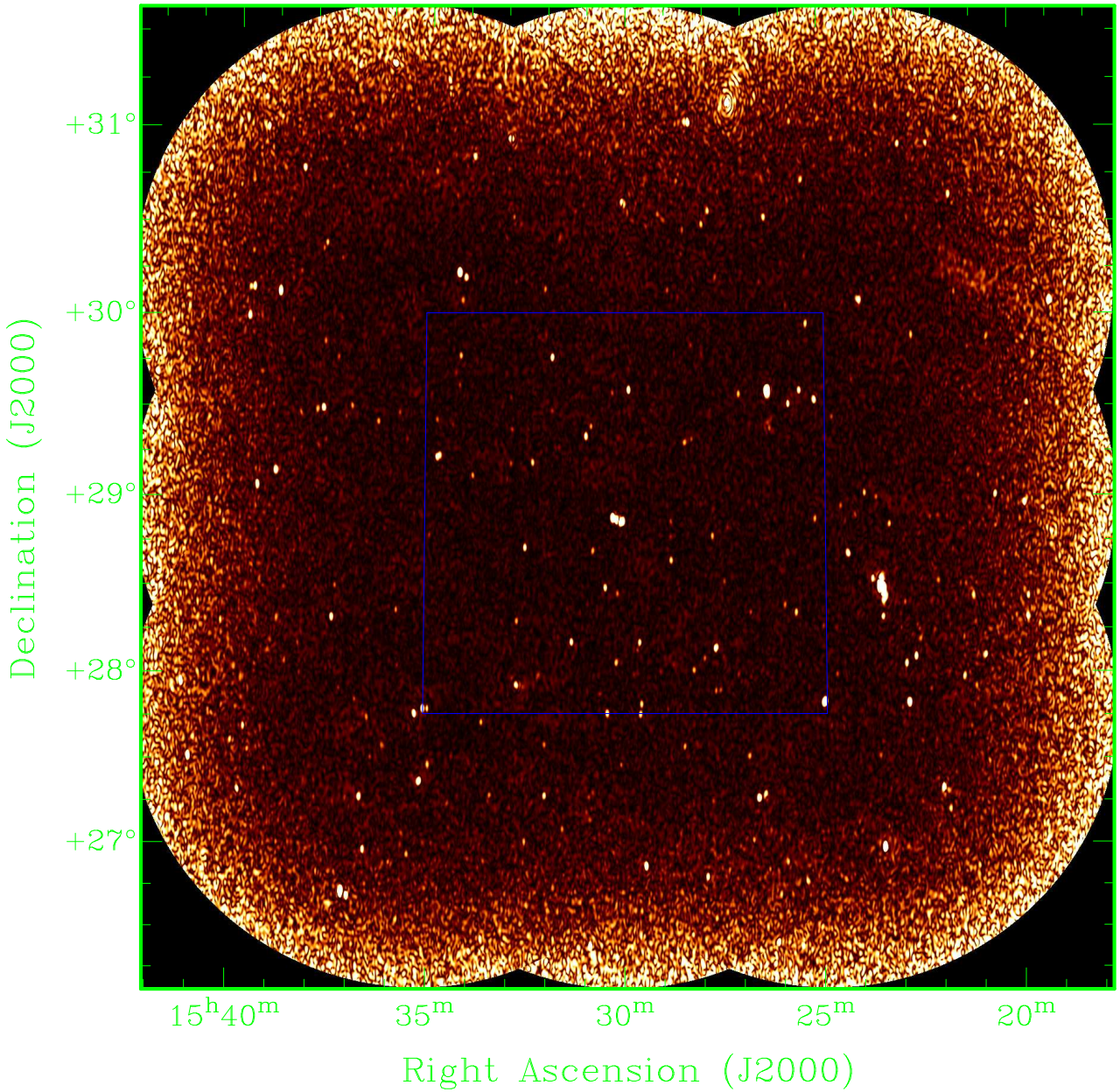


1420 MHz PI



1420 MHz PI



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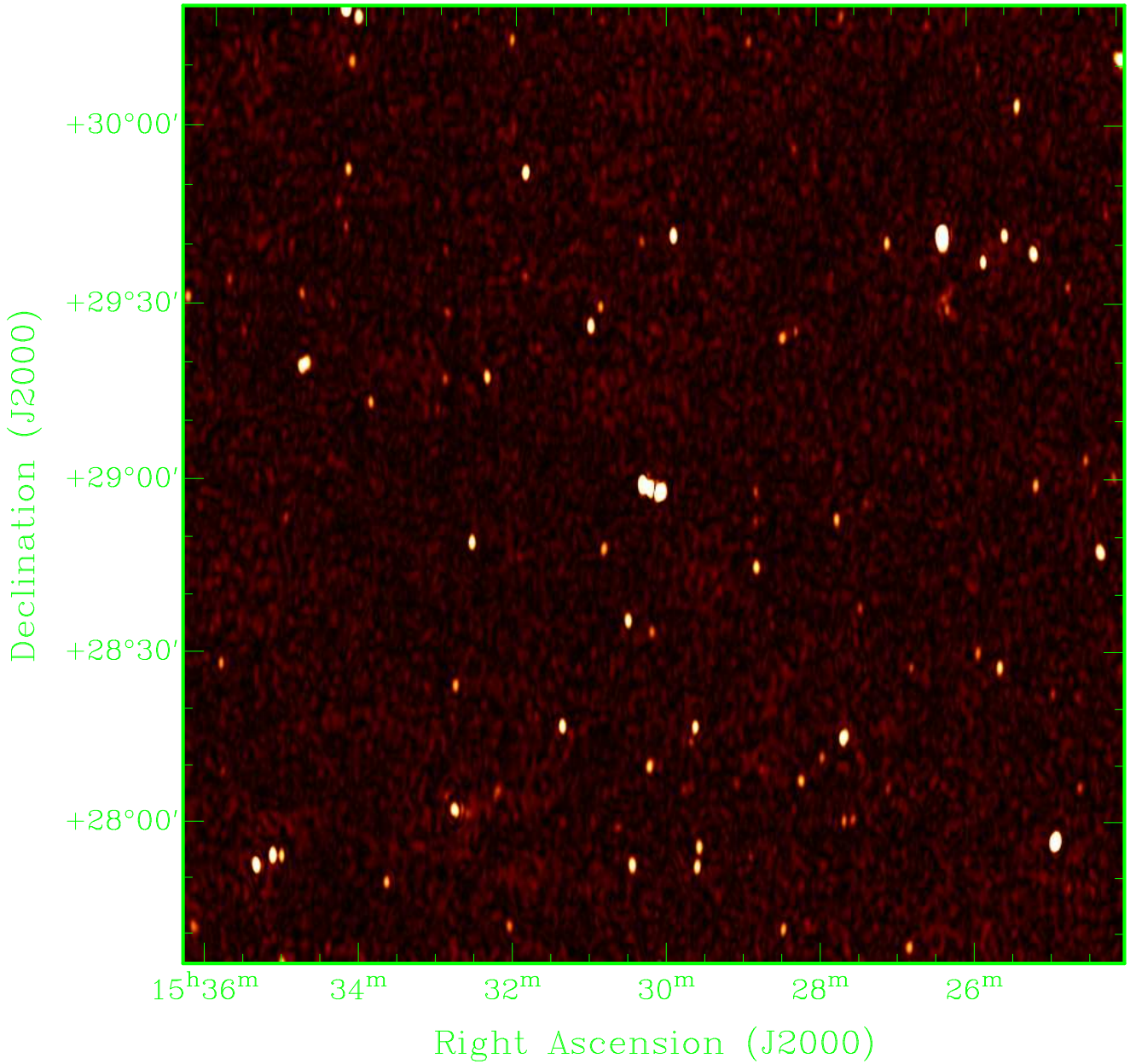
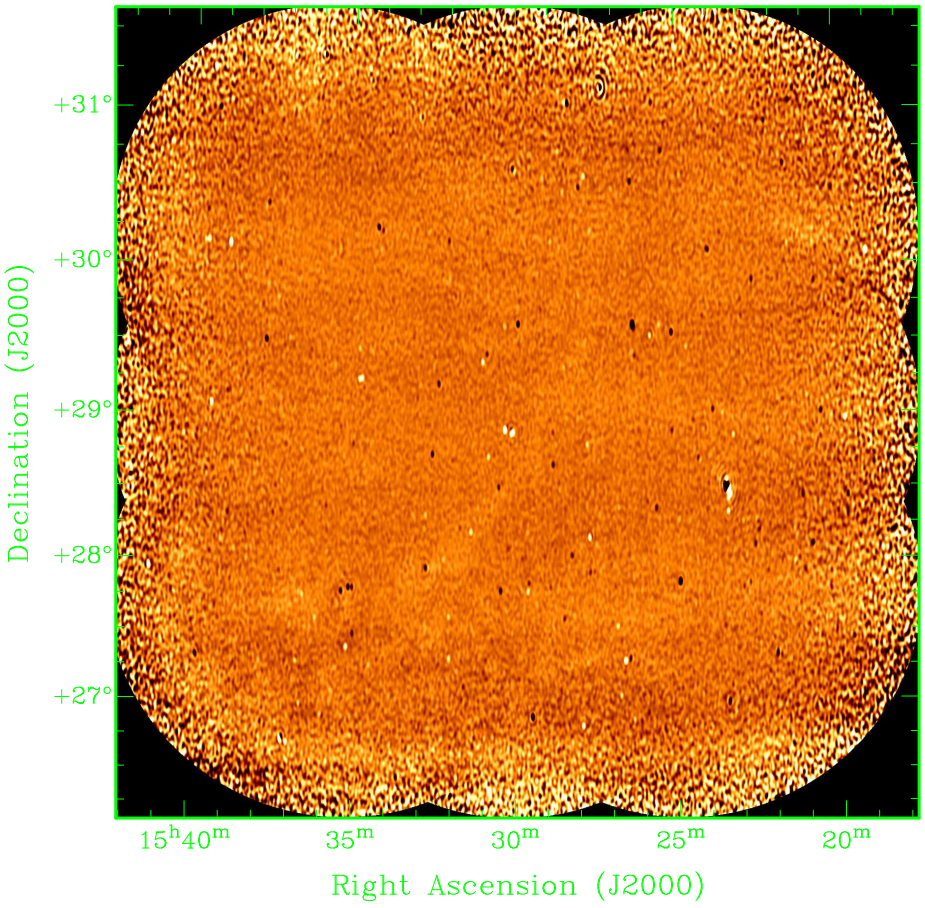
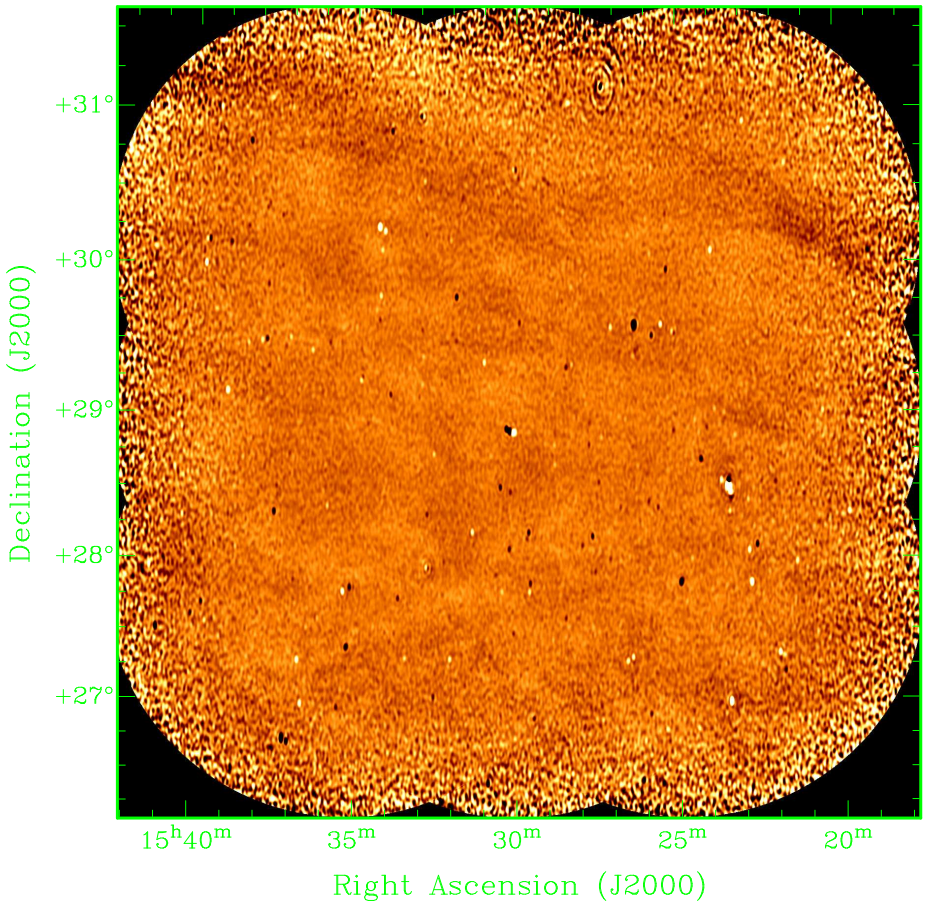


1420 MHz Stokes Q and U





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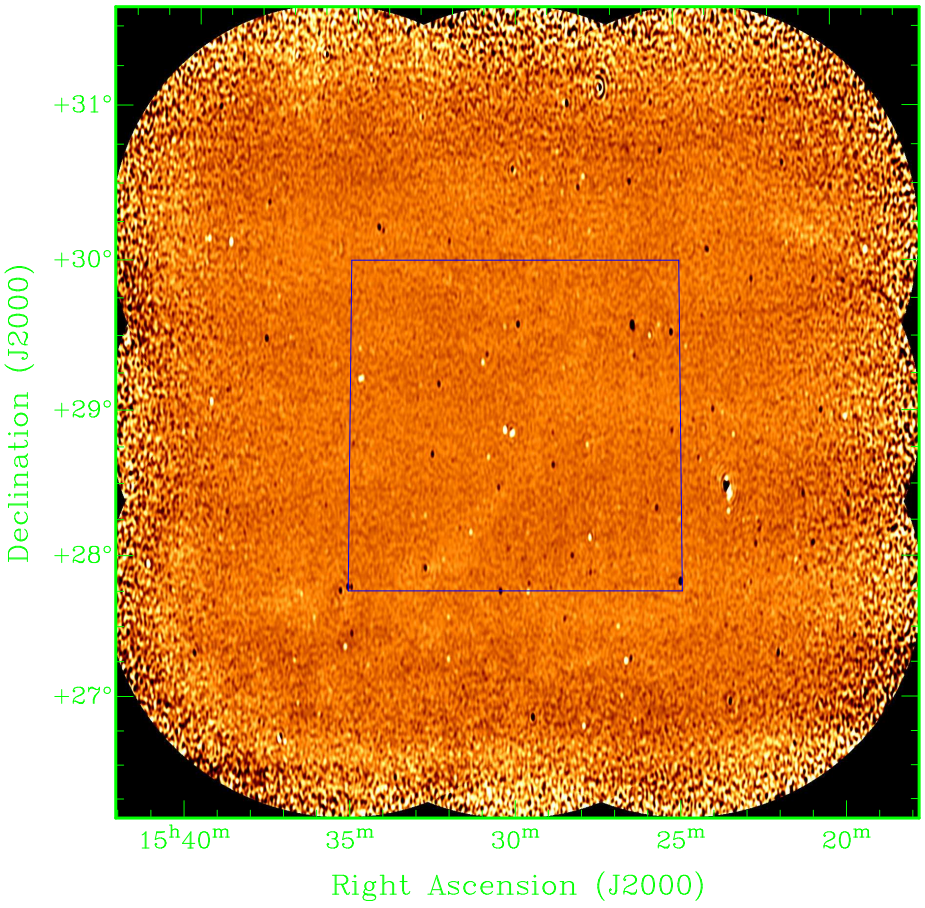

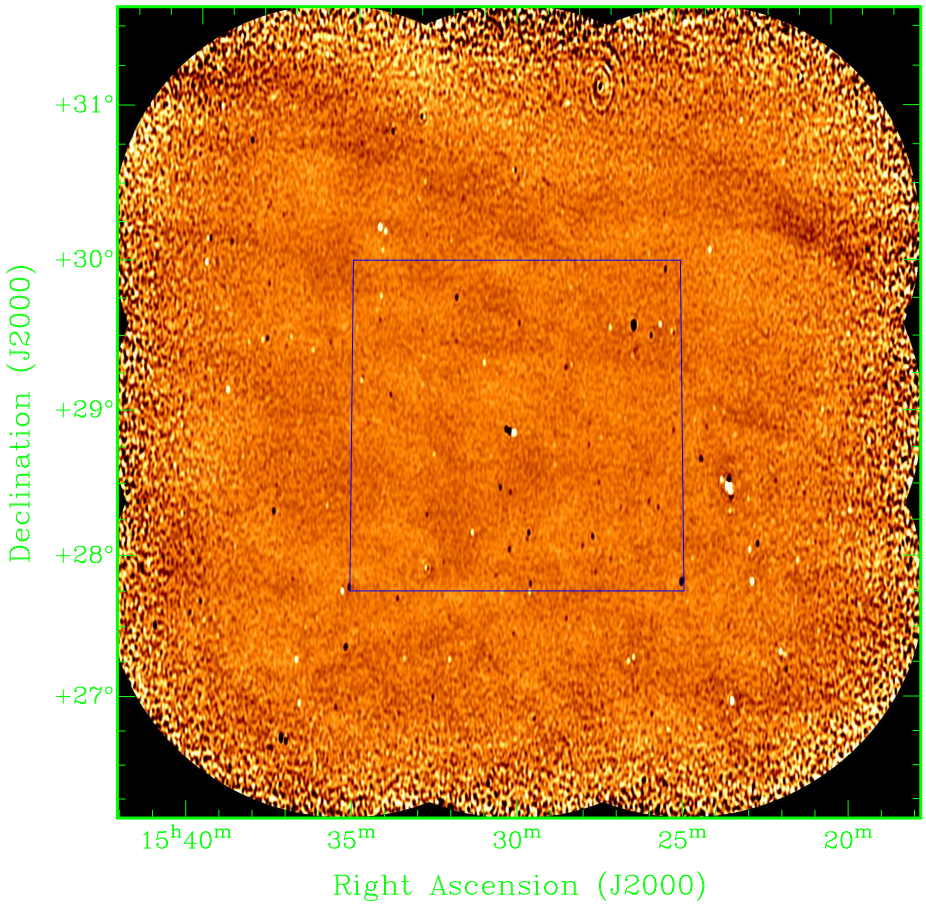

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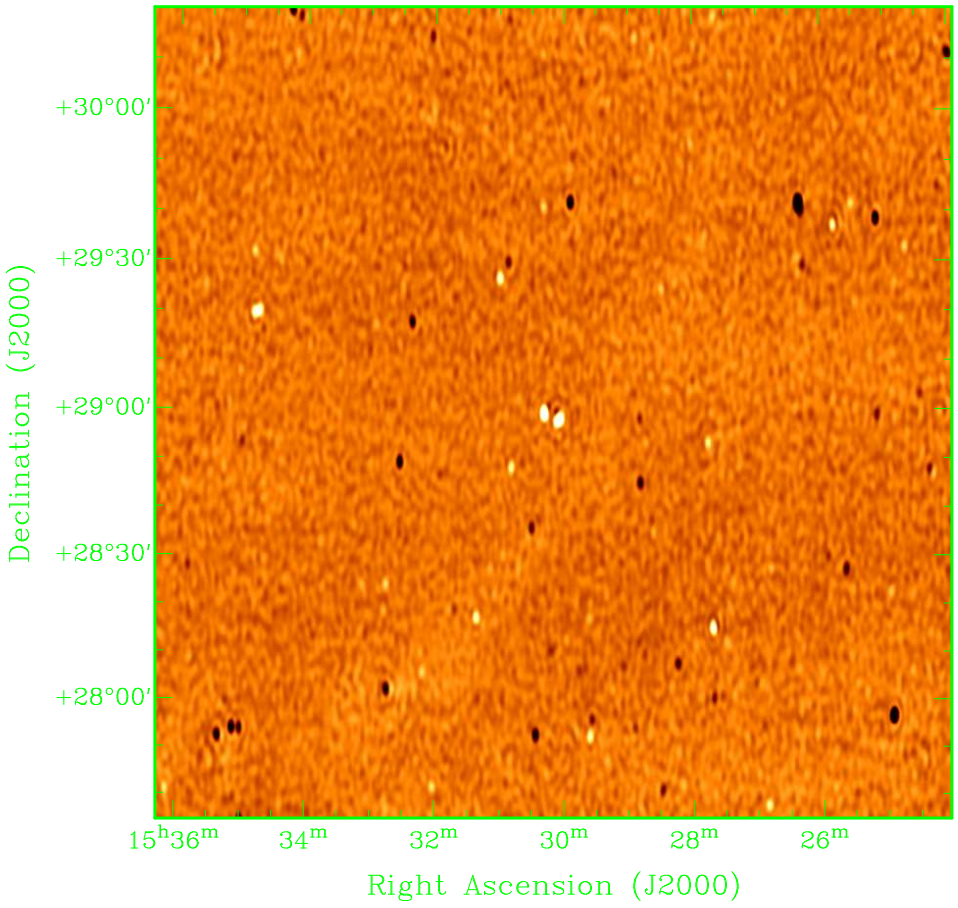
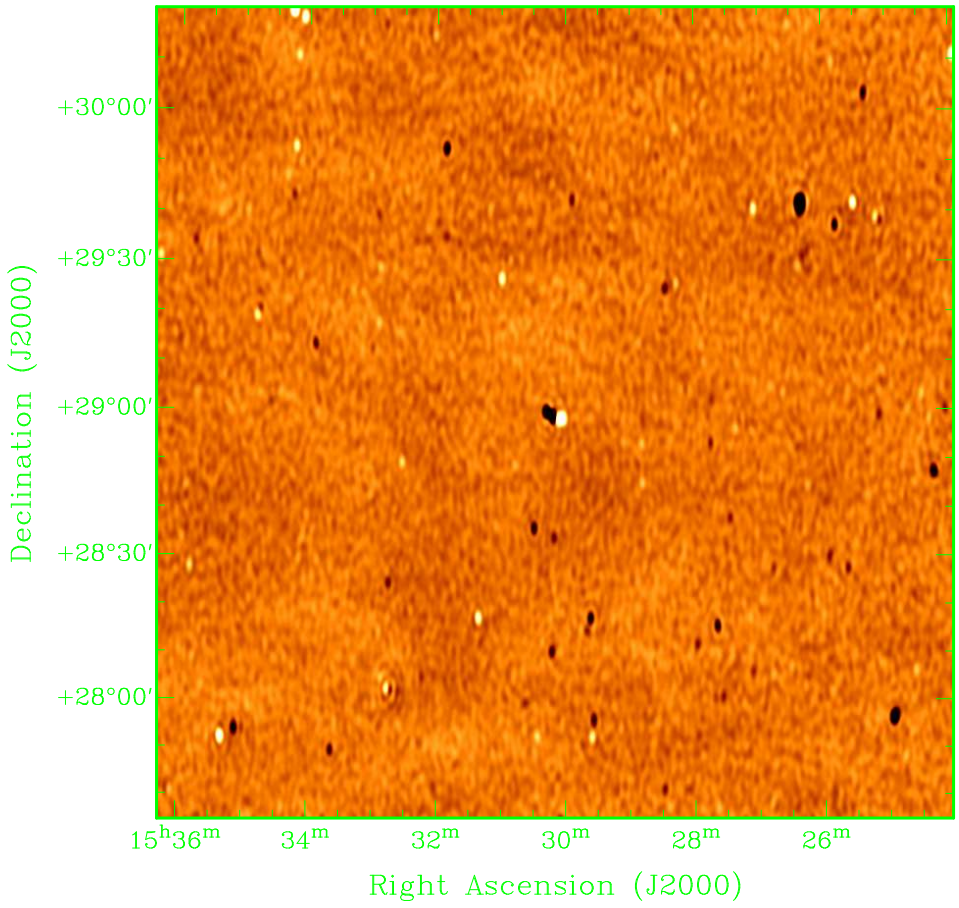
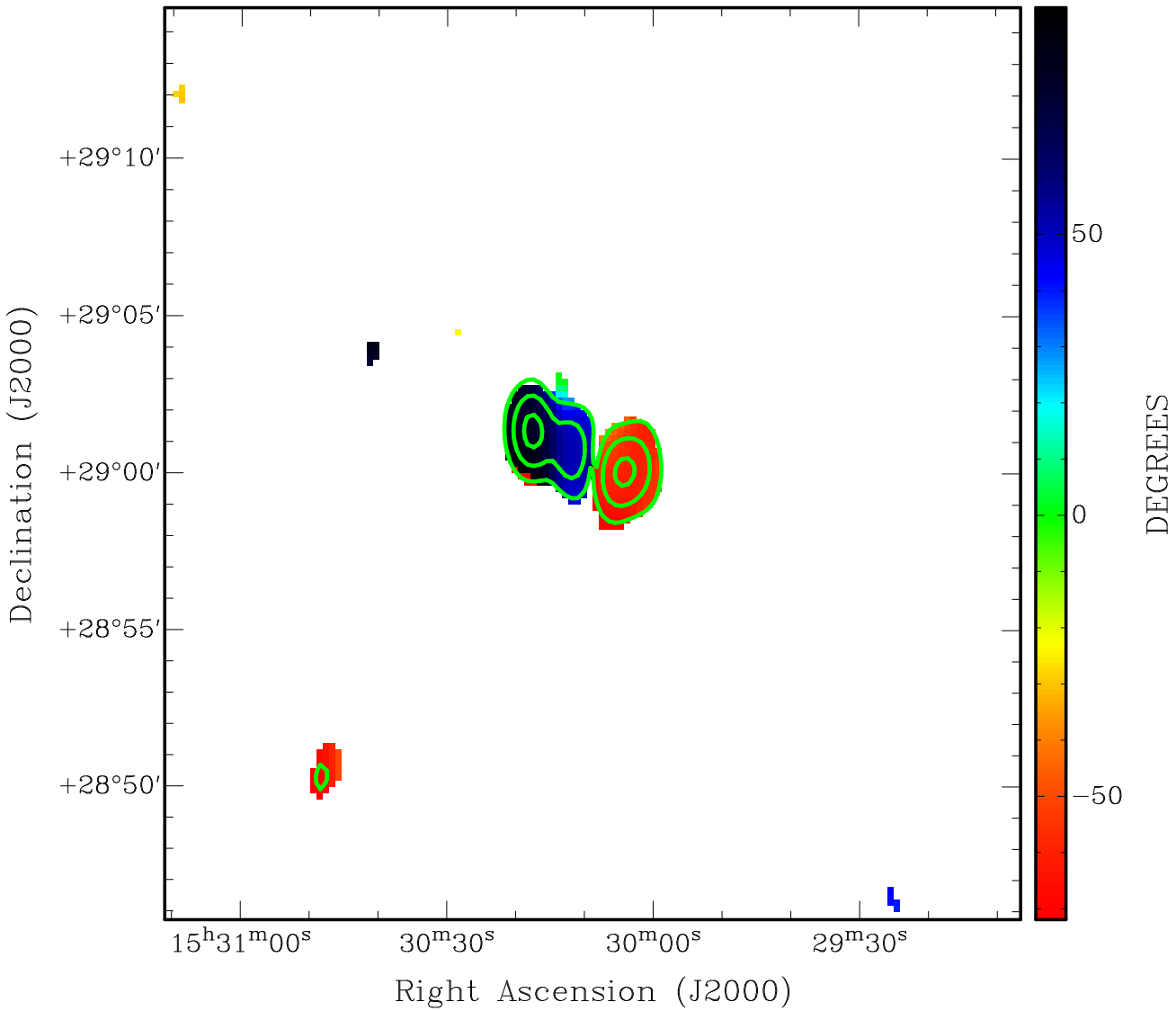




Rotation Measures



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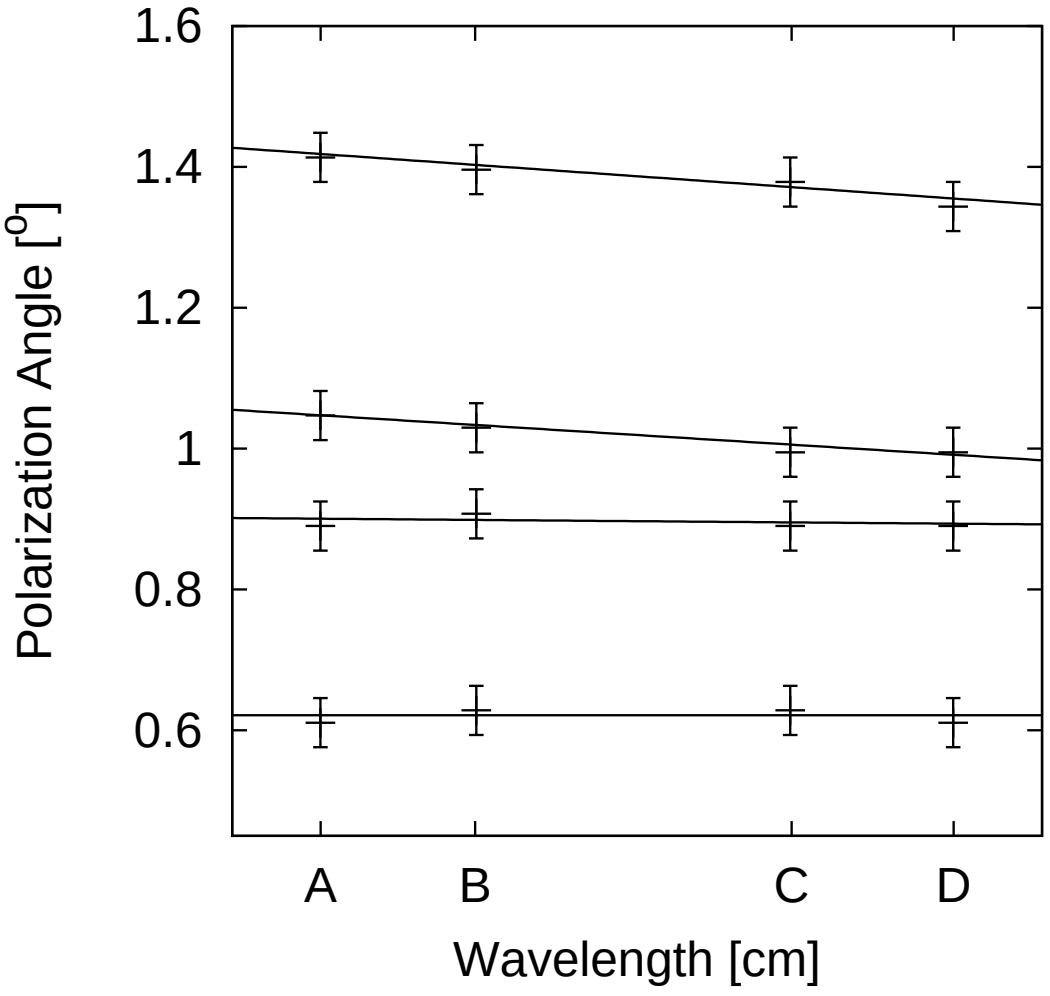
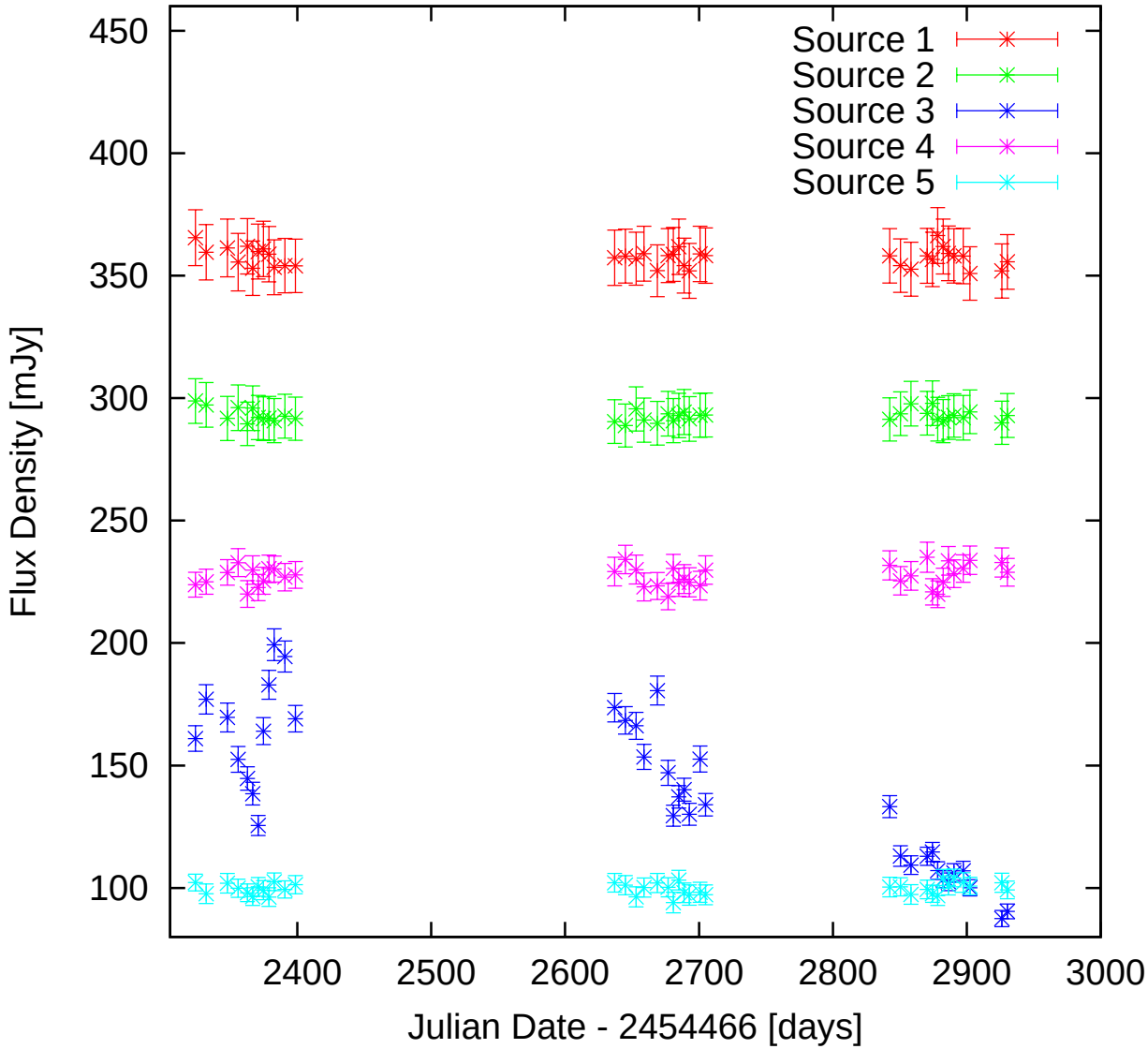


- $RM = -37 \pm 7\ \mathrm{rad\,m^{-2}}$
- $RM = -33 \pm 6\ \mathrm{rad\,m^{-2}}$
- $RM = -4 \pm 7\ \mathrm{rad\,m^{-2}}$
- $RM = 0 \pm 7\ \mathrm{rad\,m^{-2}}$

Variable Sources



Summary & Outlook

- The work on the DRAO ST Observations of the Northern Reference Field is progressing very well.
- Nice Results for polarization characteristics.
- Variable source project is running very well.
- I wish more people would look at their data of the reference fields.
- Anybody who would like to join this project is very welcome.