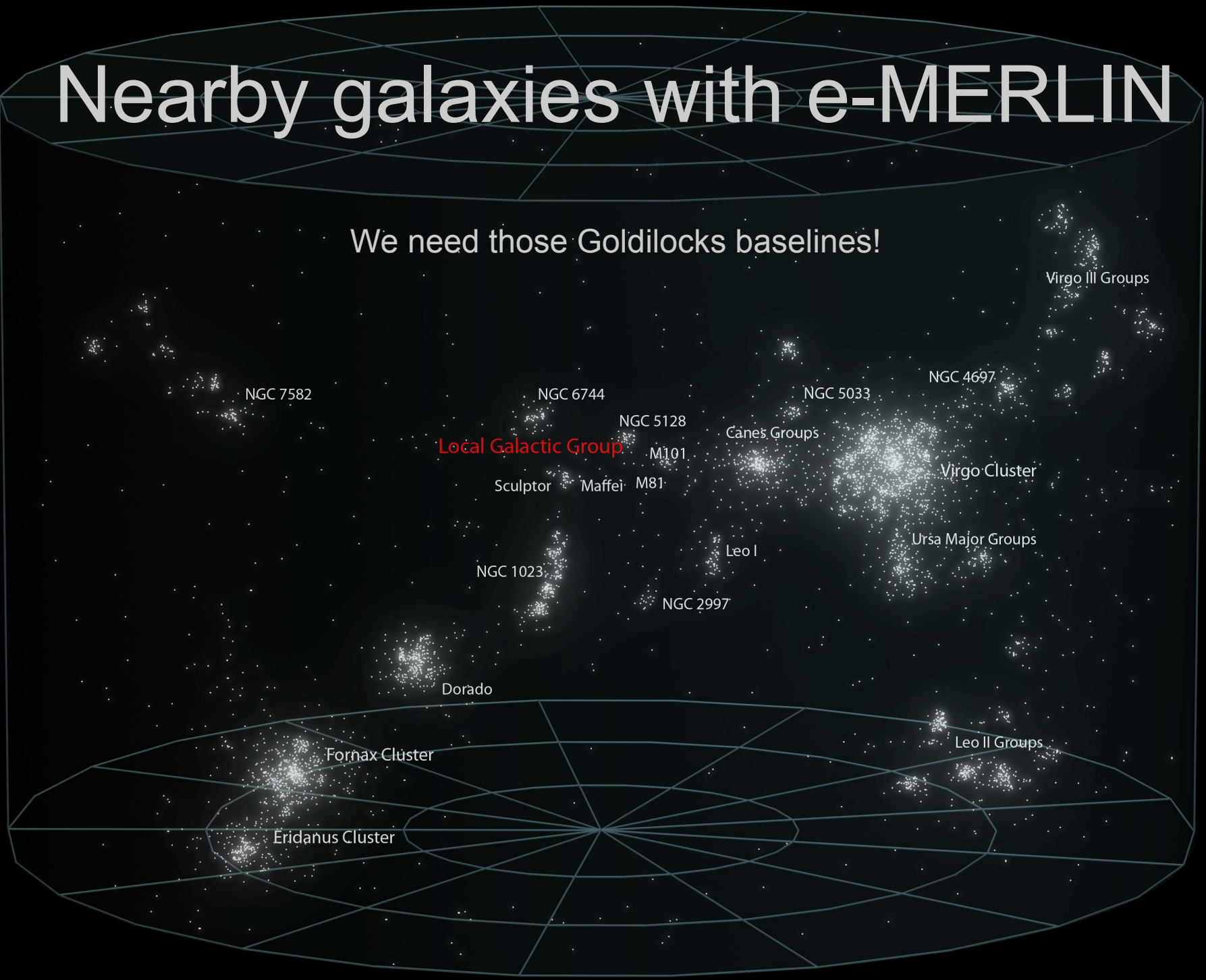
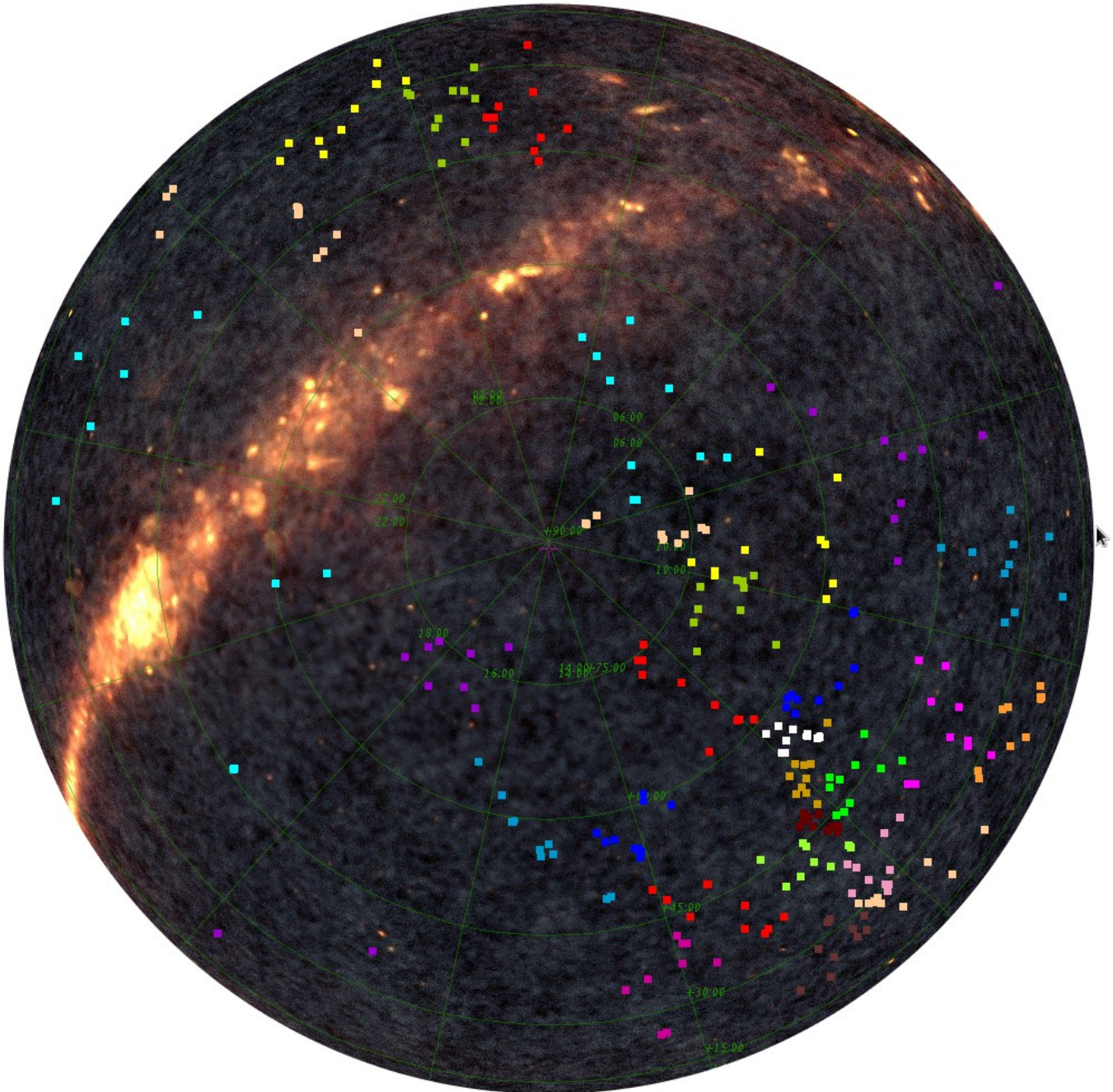
Nearby galaxies with e-MERLIN



By Andrew Z. Colvin - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=14359697

LeMMINGS


02:00
06:00
06:00
22:00
22:00
+90:00
10:00
18:00
16:00
14:00
+75:00
+60:00
+45:00
+30:00
+15:00

LeMMINGS: IC10

Nearby dwarf irregular

LeMMINGS Deep

Bursty SF history

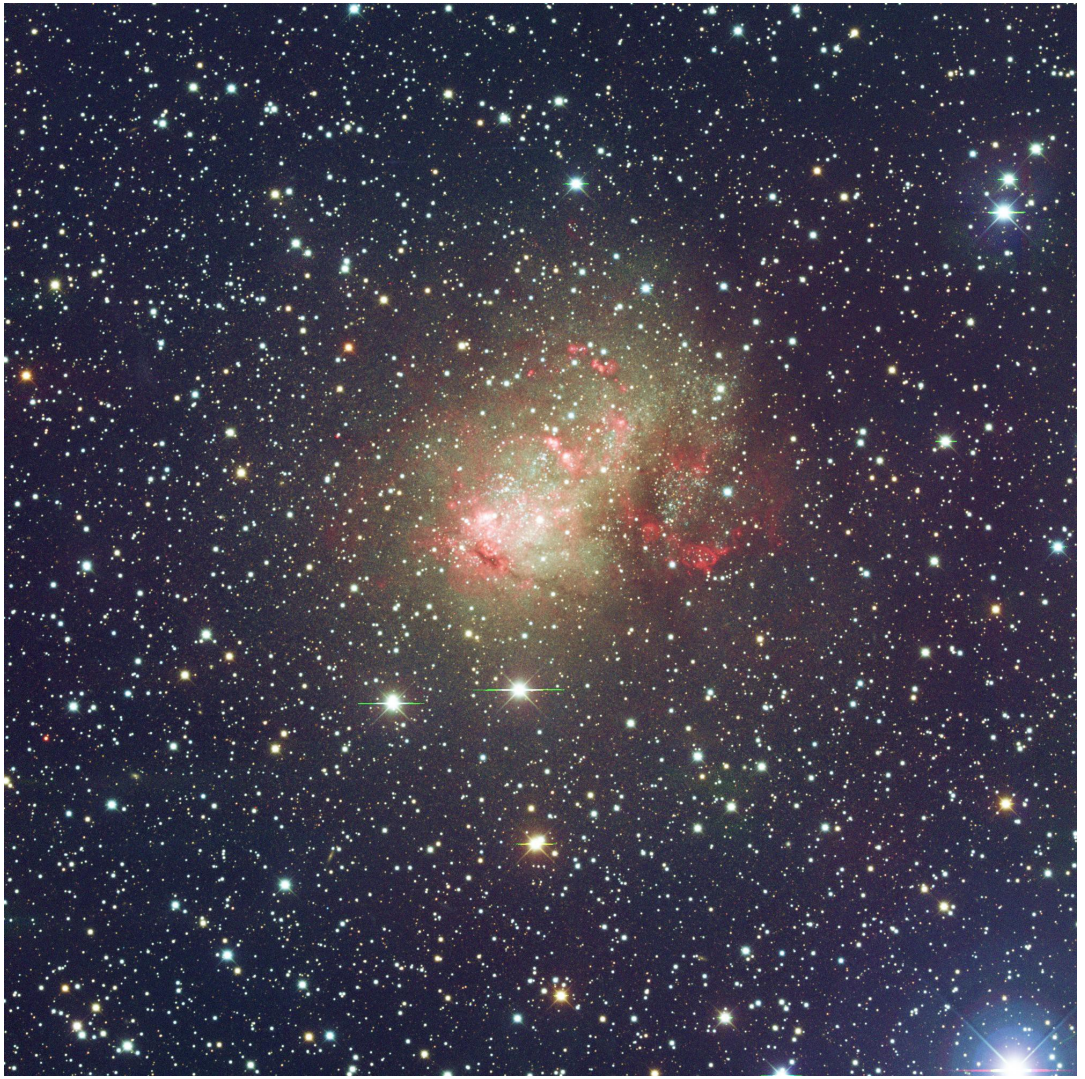
Current starburst phase

Optical HII regions

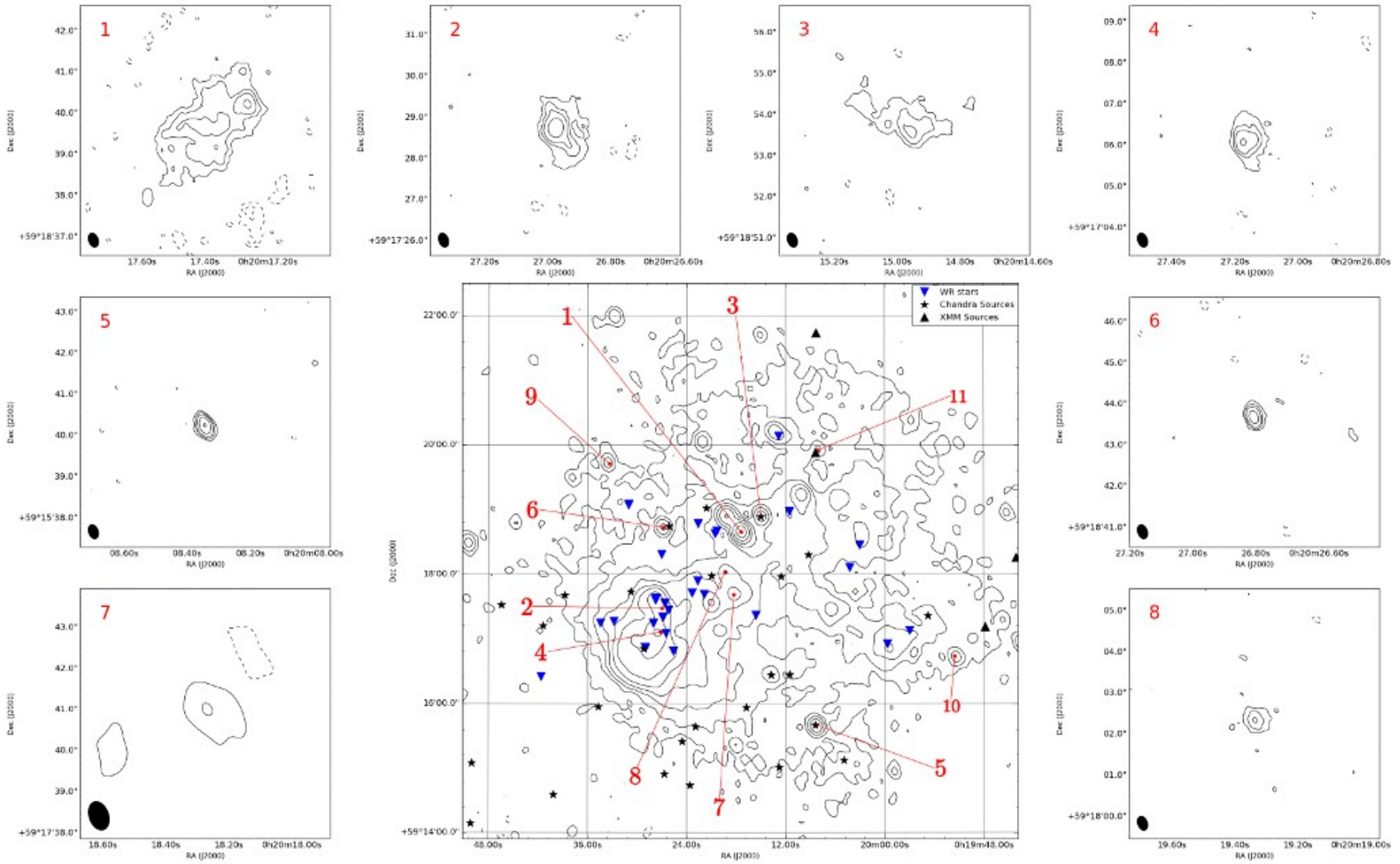
Large HI envelope

Inner rotating disk

Accreting, or merger?



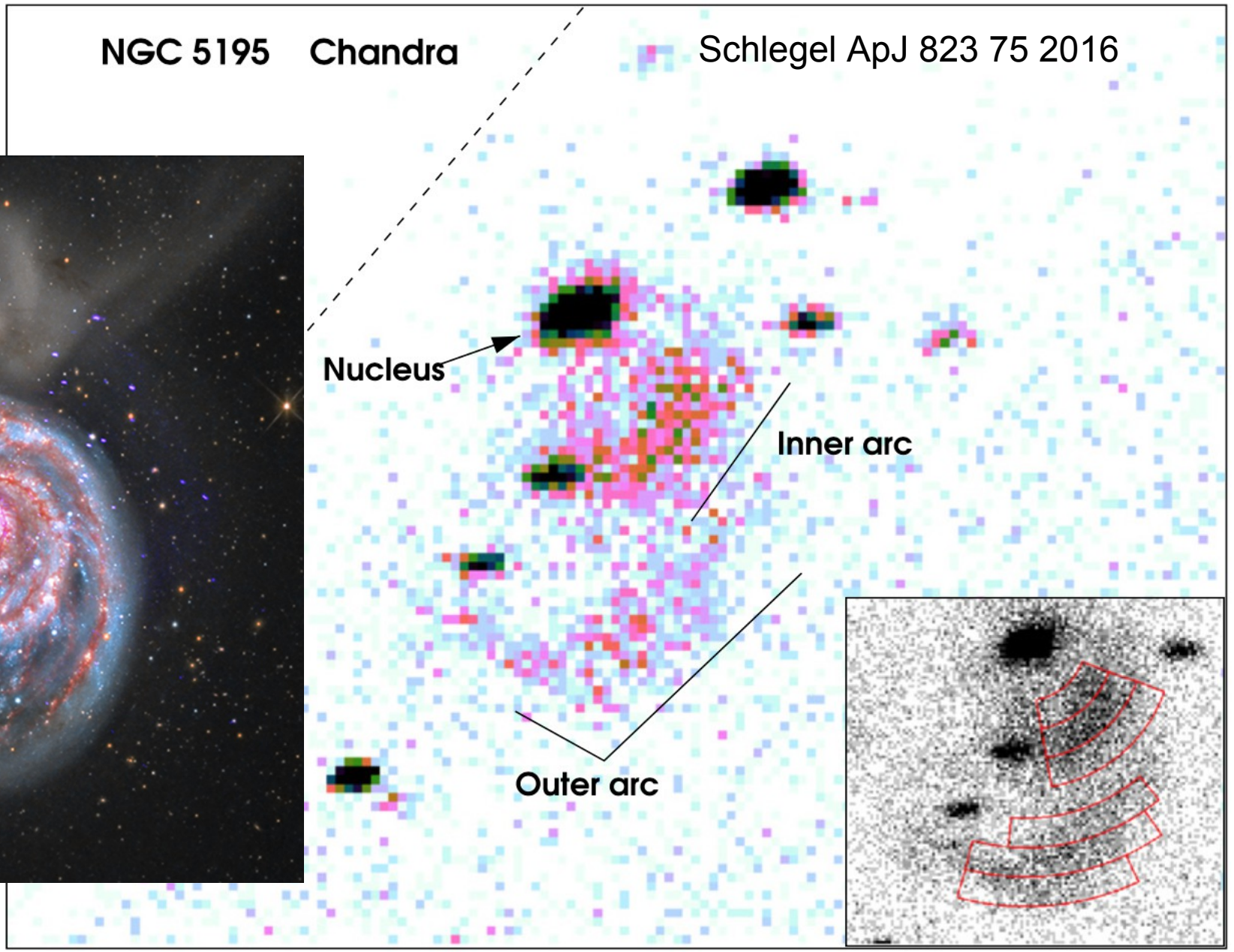
Westcott et al in prep



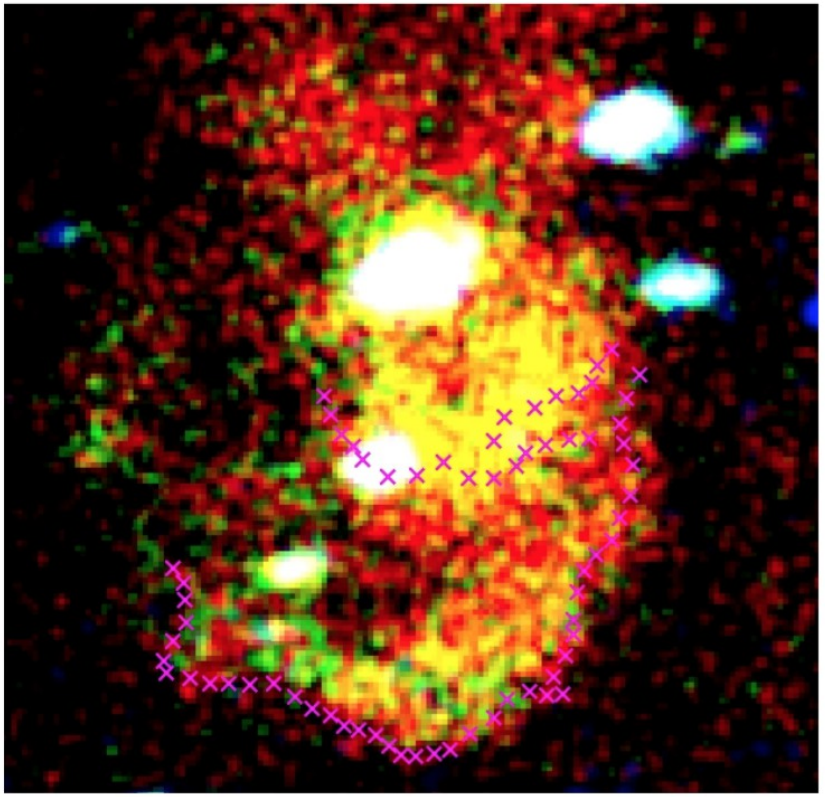
11/5/3

Westcott et al in prep. Main: VLA C+D 1.4GHz. Insets: e-MERLIN 1.4-GHz detections.

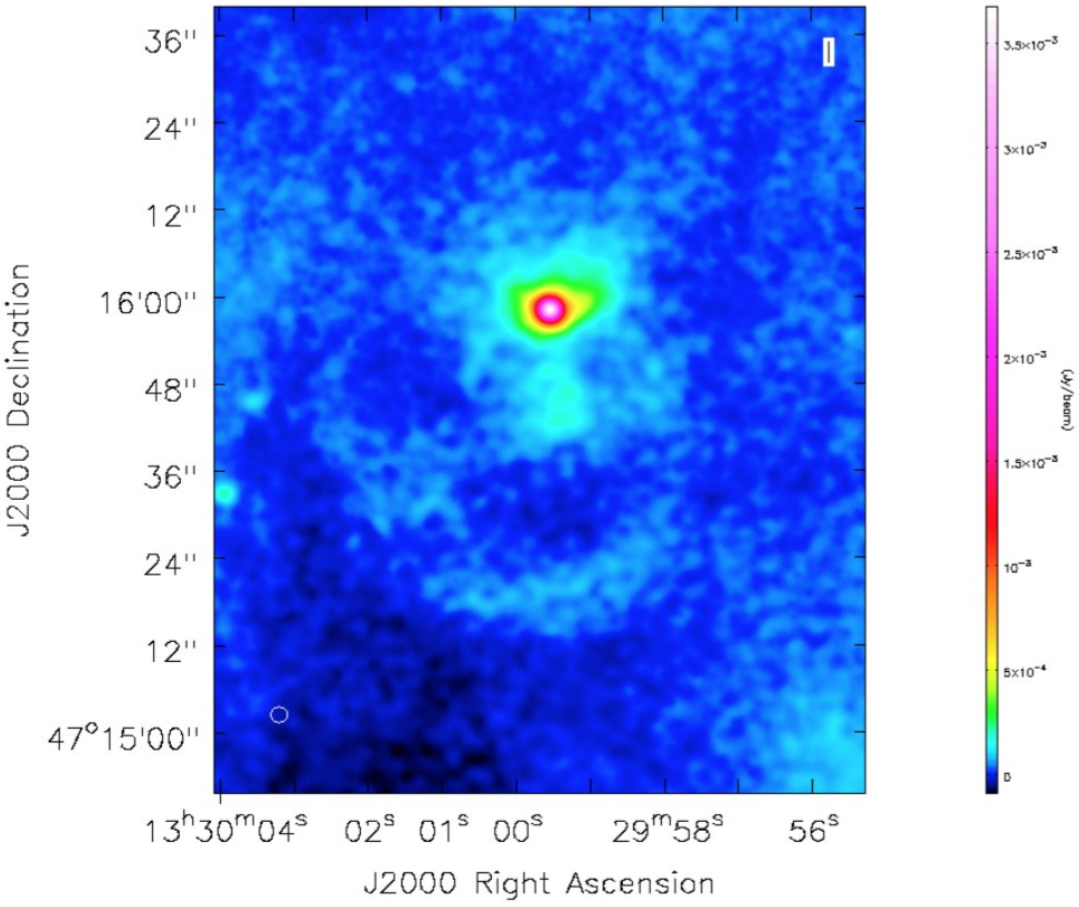
LeMMINGS: M51



LeMMINGS: M51



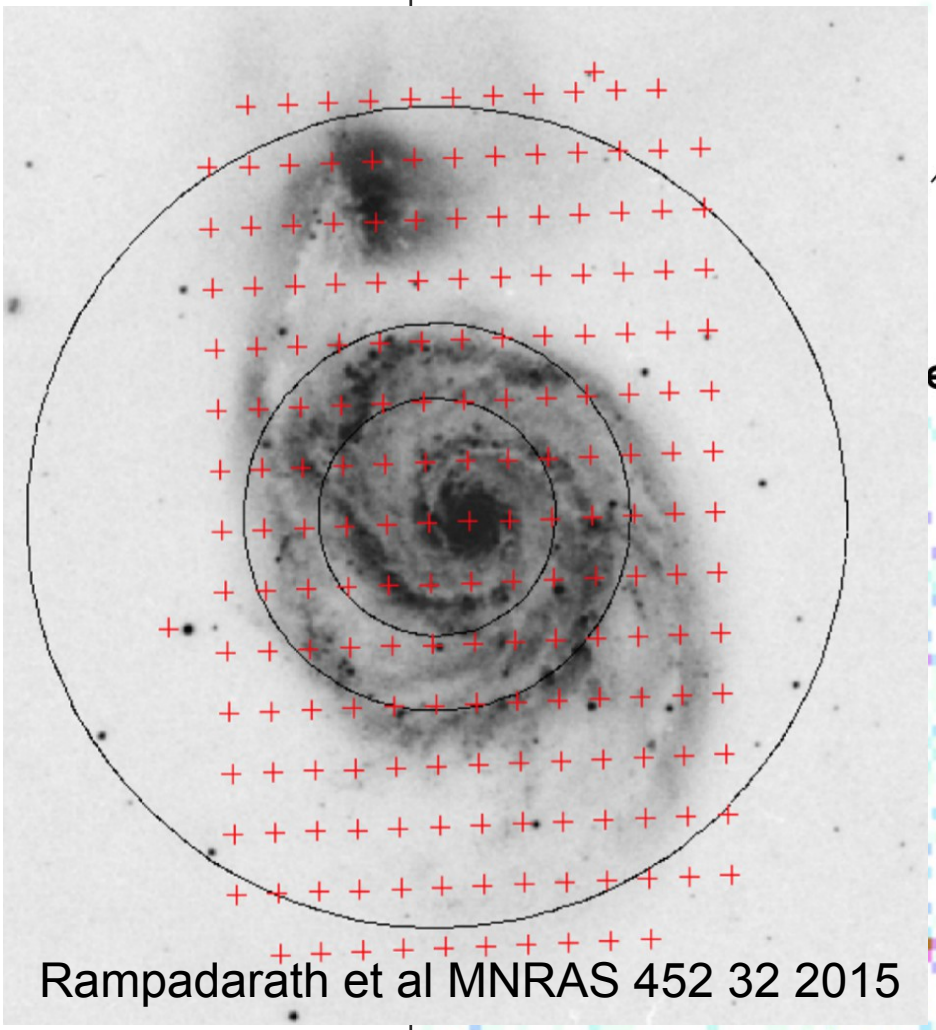
(a) X-ray



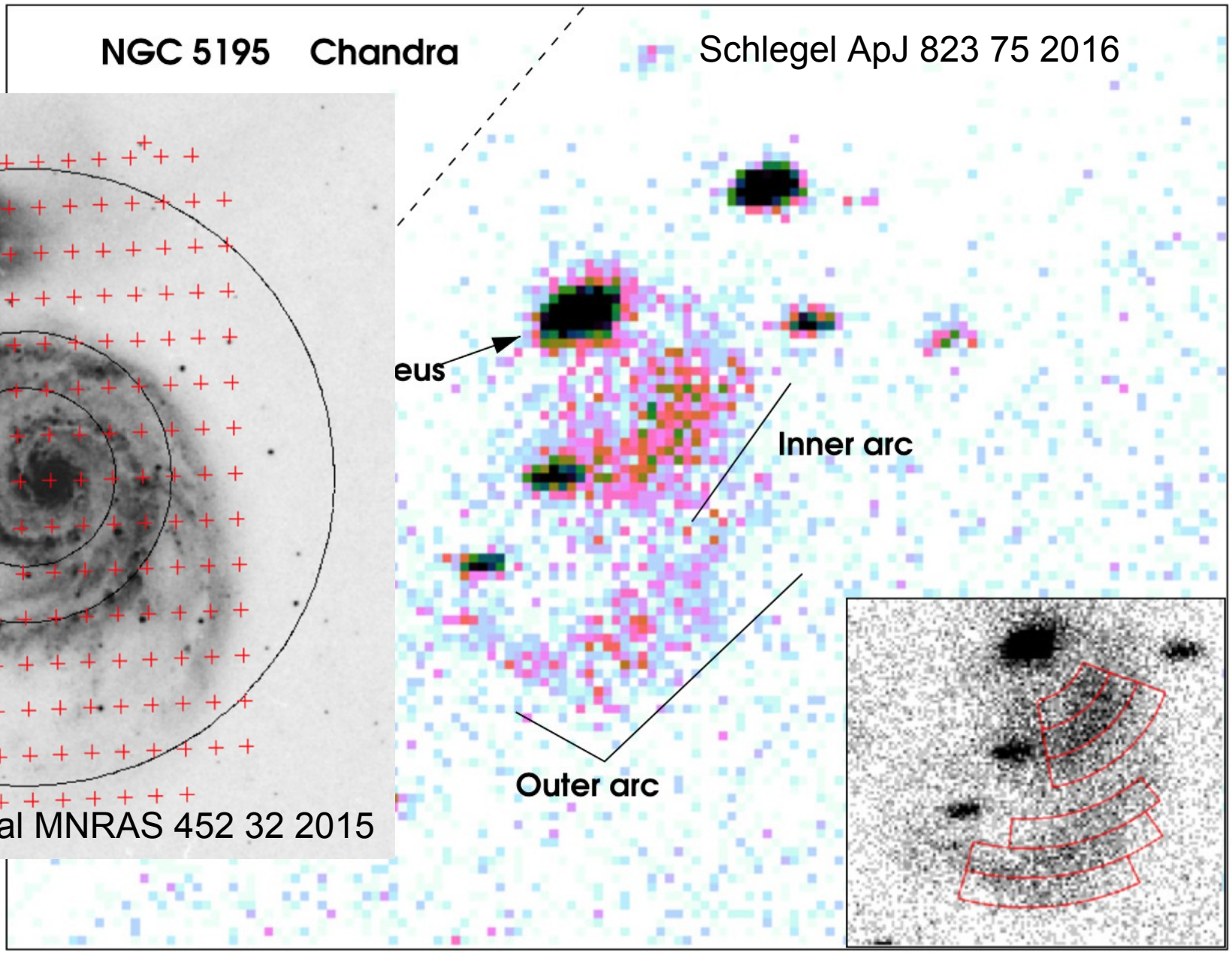
(b) VLA L-band

Rampadarath et al in prep

LeMMINGS: M51



Rampadarath et al MNRAS 452 32 2015



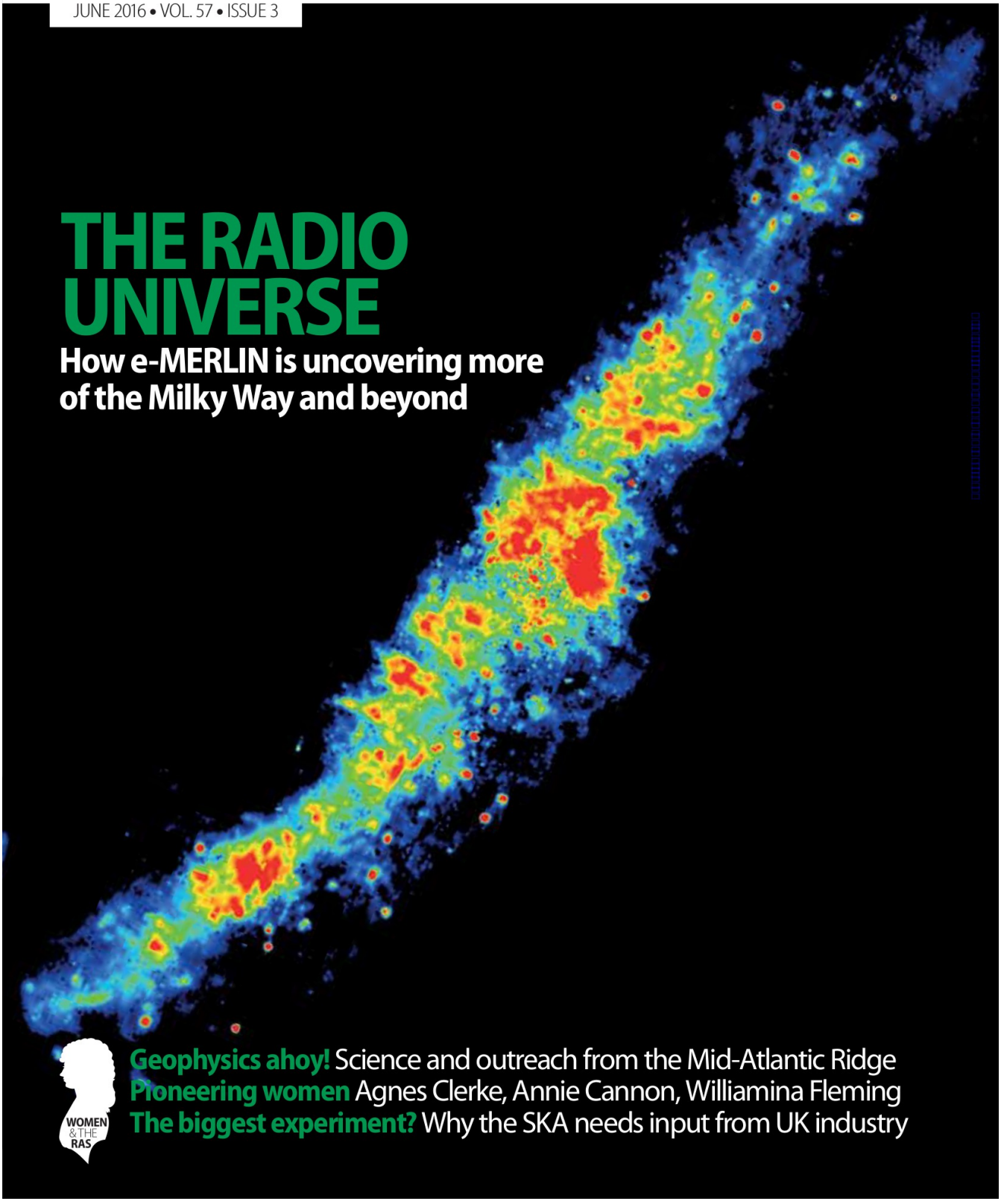
A&G NEWS & REVIEWS IN ASTRONOMY & GEOPHYSICS

Advancing Astronomy and Geophysics

JUNE 2016 • VOL. 57 • ISSUE 3

THE RADIO UNIVERSE

How e-MERLIN is uncovering more of the Milky Way and beyond

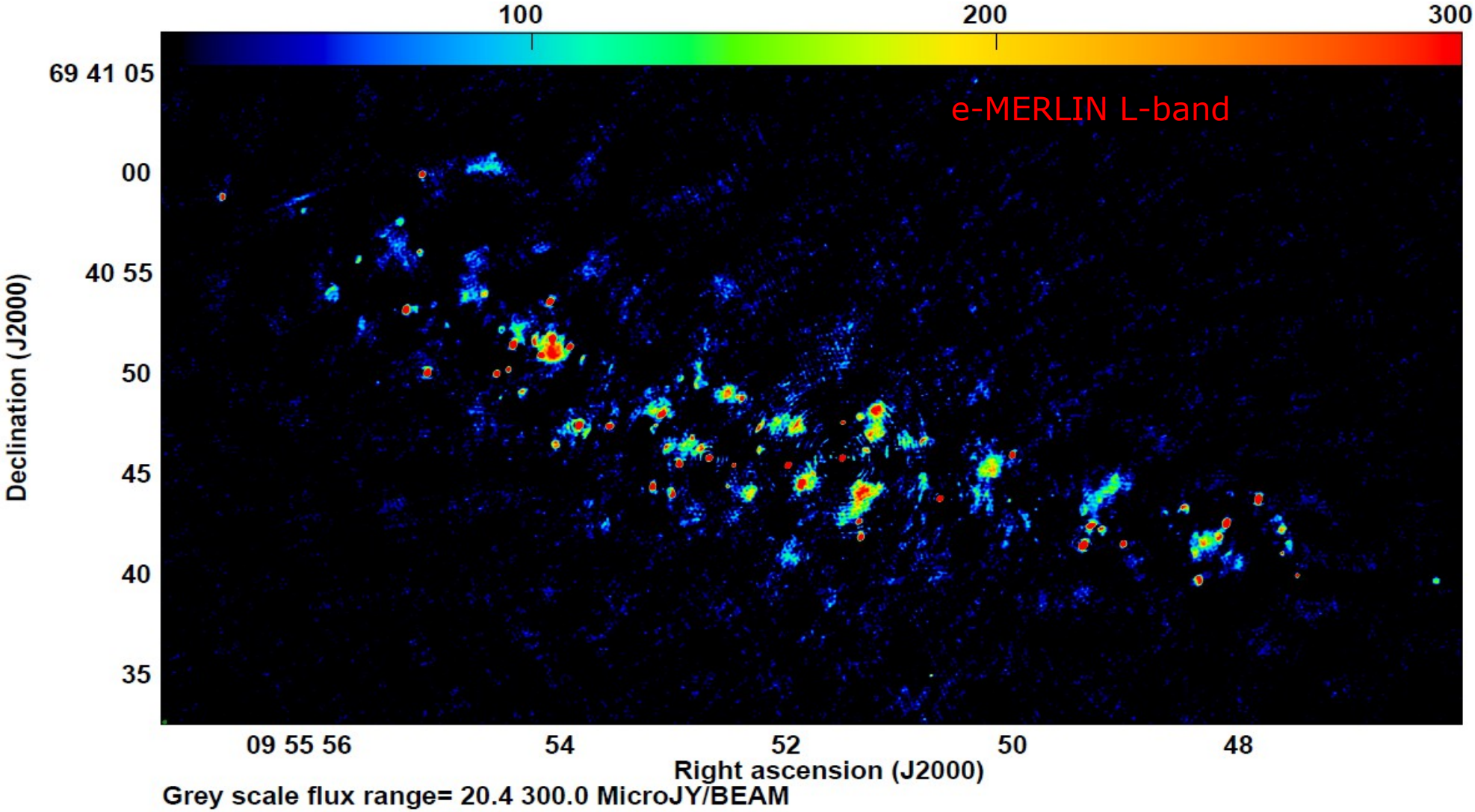


Geophysics ahoy! Science and outreach from the Mid-Atlantic Ridge
Pioneering women Agnes Clerke, Annie Cannon, Williamina Fleming
The biggest experiment? Why the SKA needs input from UK industry

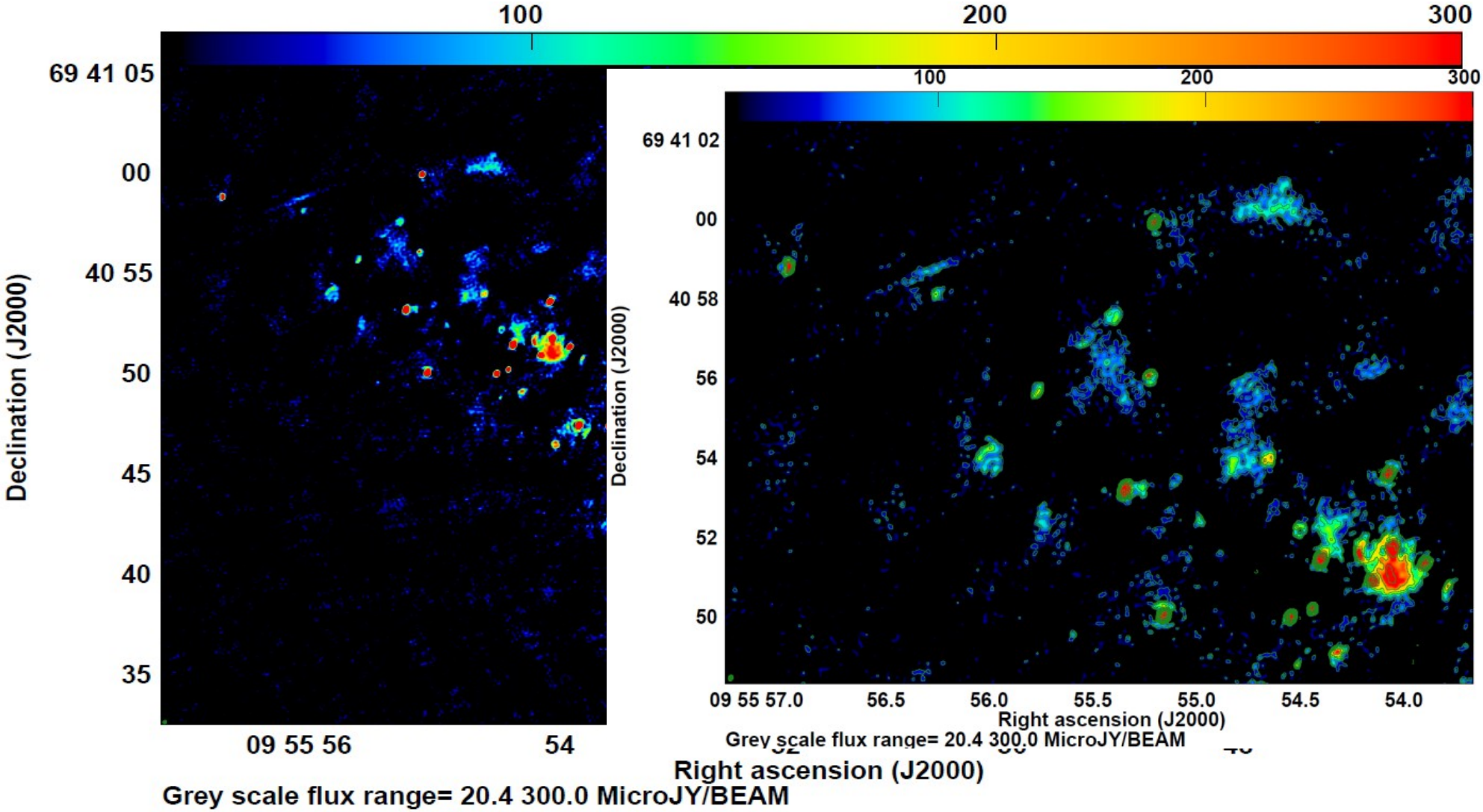
WOMEN & THE RAS

e-MERLIN+JVLA (A-array) combination image of M82 at 5.5GHz showing radio emission from the nuclear starburst region in M82. Emission covers the central ~1kpc in M82 and originates in relativistic plasma released in recent supernova explosions from high mass stars. e-MERLIN data observed 30-May-2015, JVLA data observed 21-Nov-2012 & corrected to epoch 30-May-2015 for source variability in 2 compact image components.
Credit: Tom Muxlow, Jodrell Bank Centre for Astrophysics, University of Manchester.

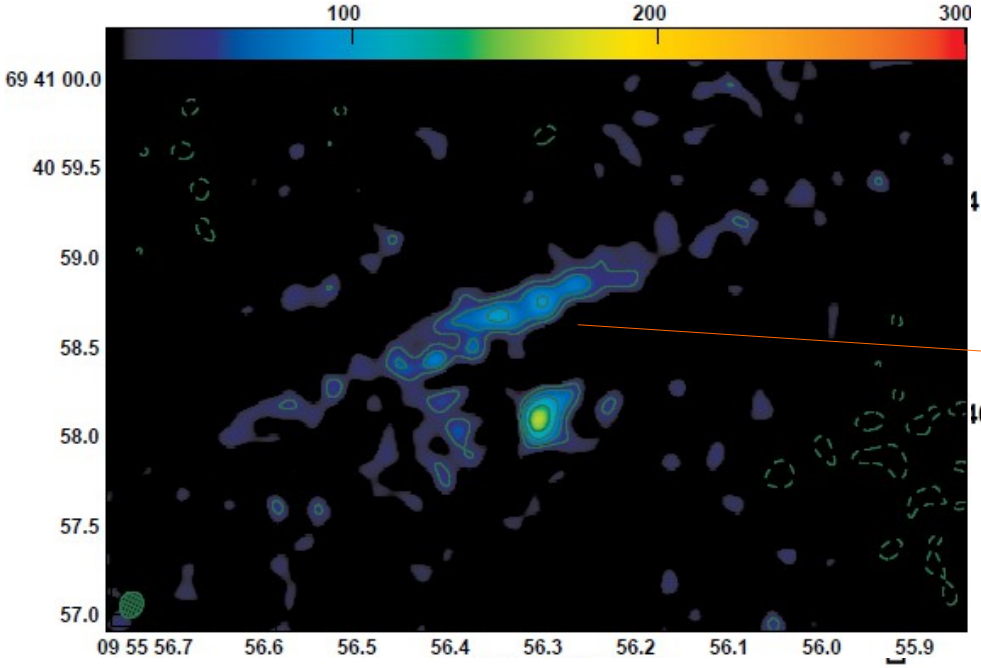
LeMMINGS: M82

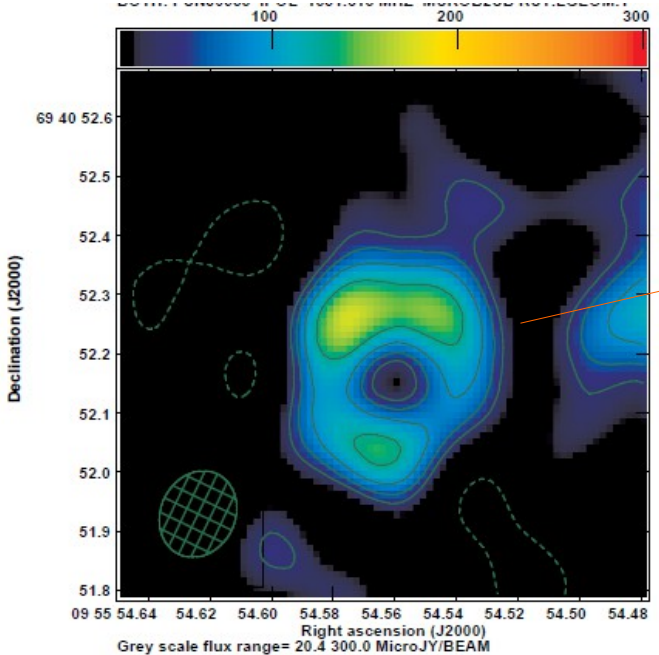


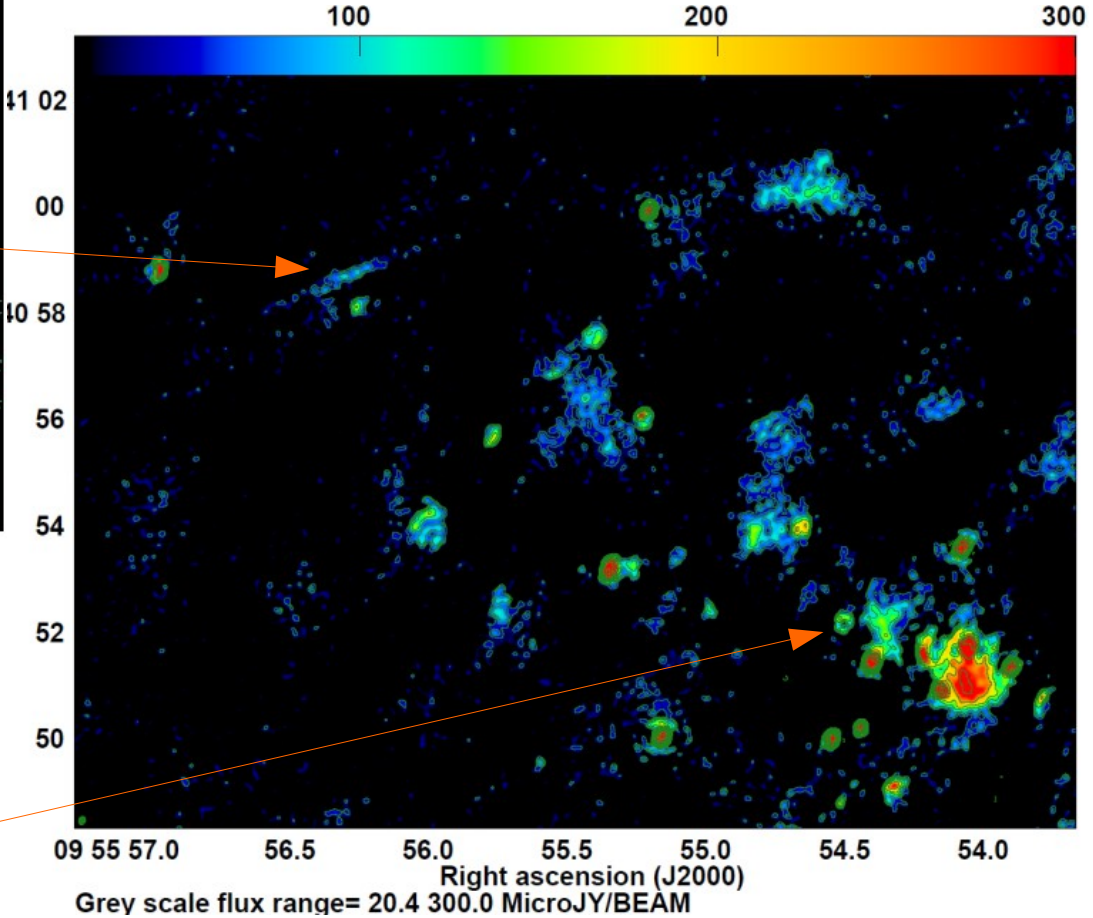
LeMMINGS: M82



LeMMINGS: M82

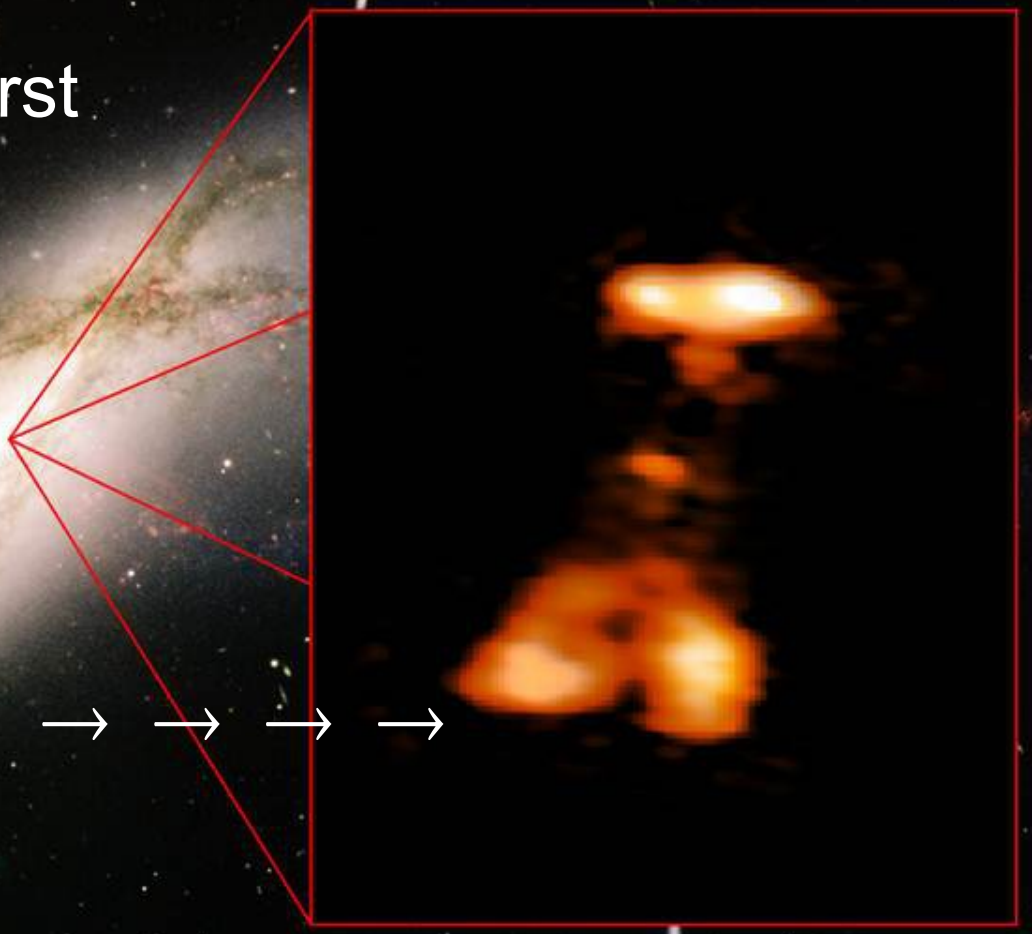






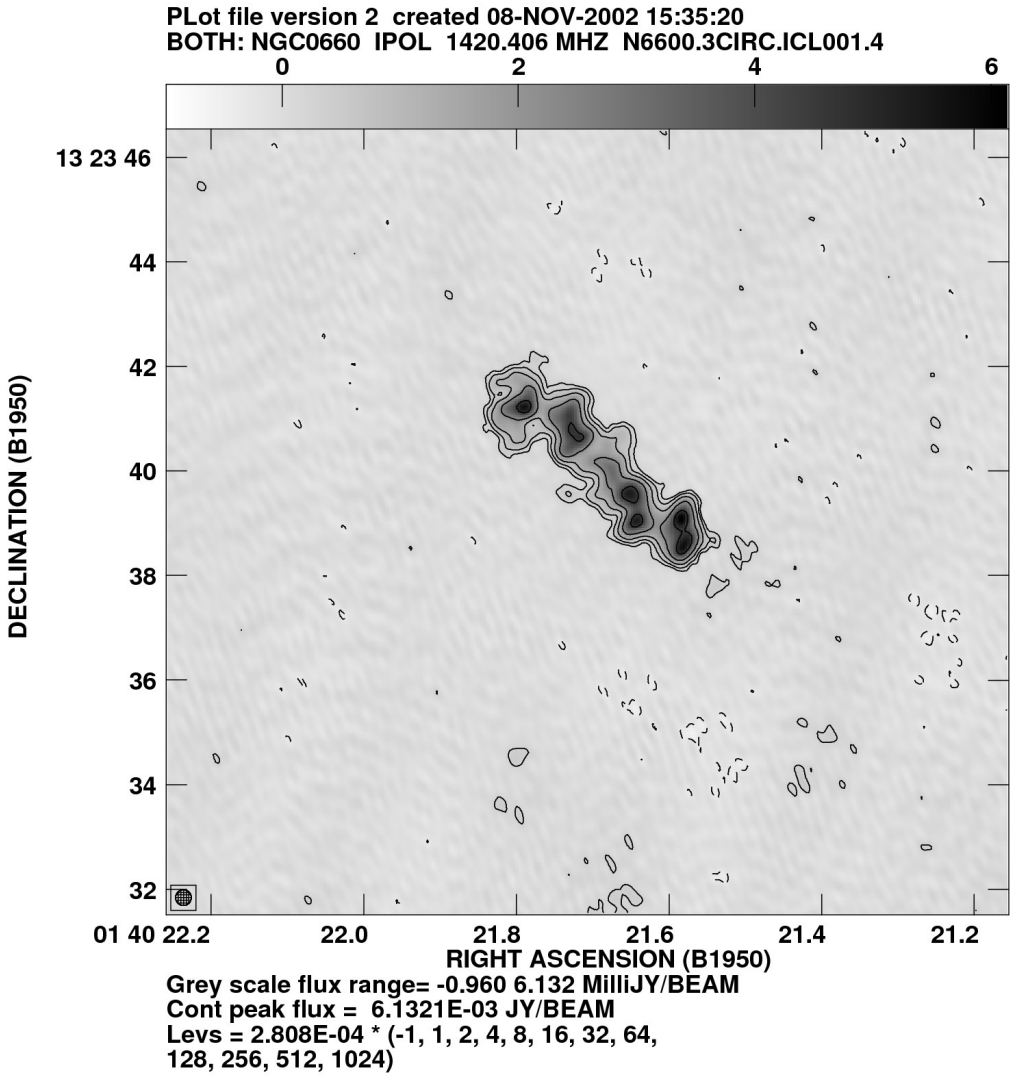
NGC660

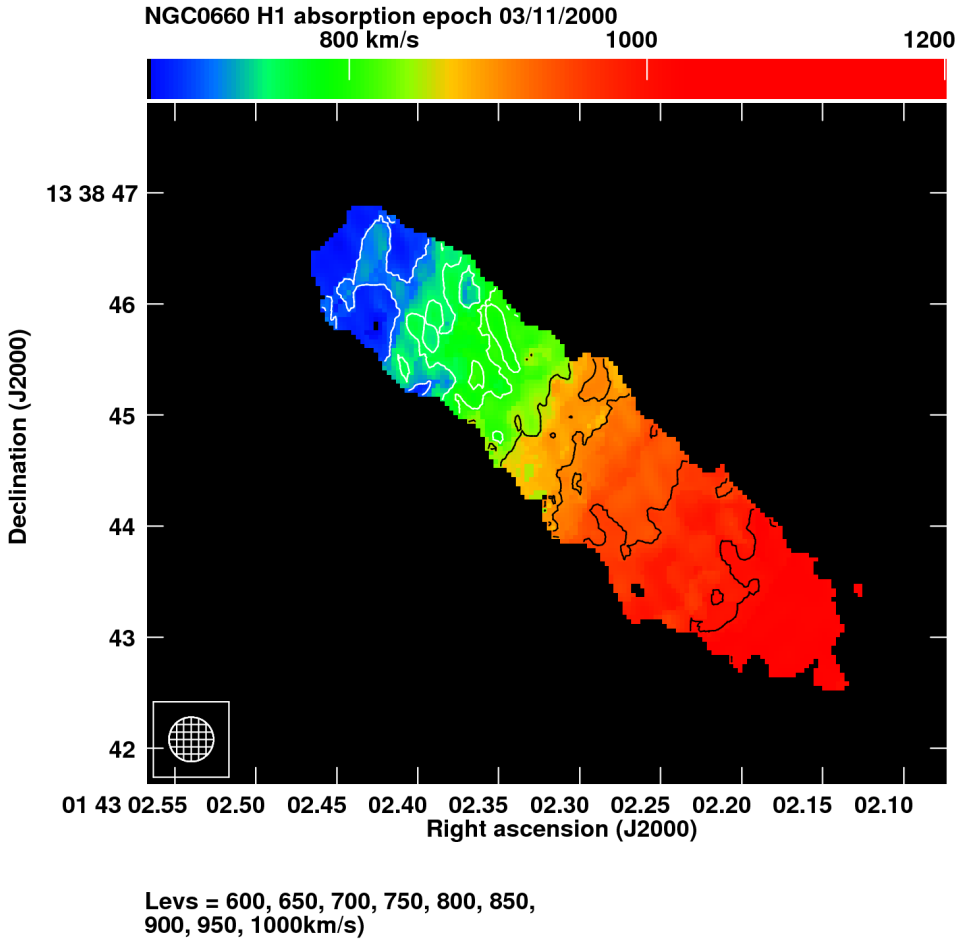
- 2013: Continuum outburst
- New component
- GHz-peak spectrum
- 0.5Jy at 5GHz
- OH and H_2CO changes
- HSA structure → → → → → → →
- 2008.0 to 2012.0



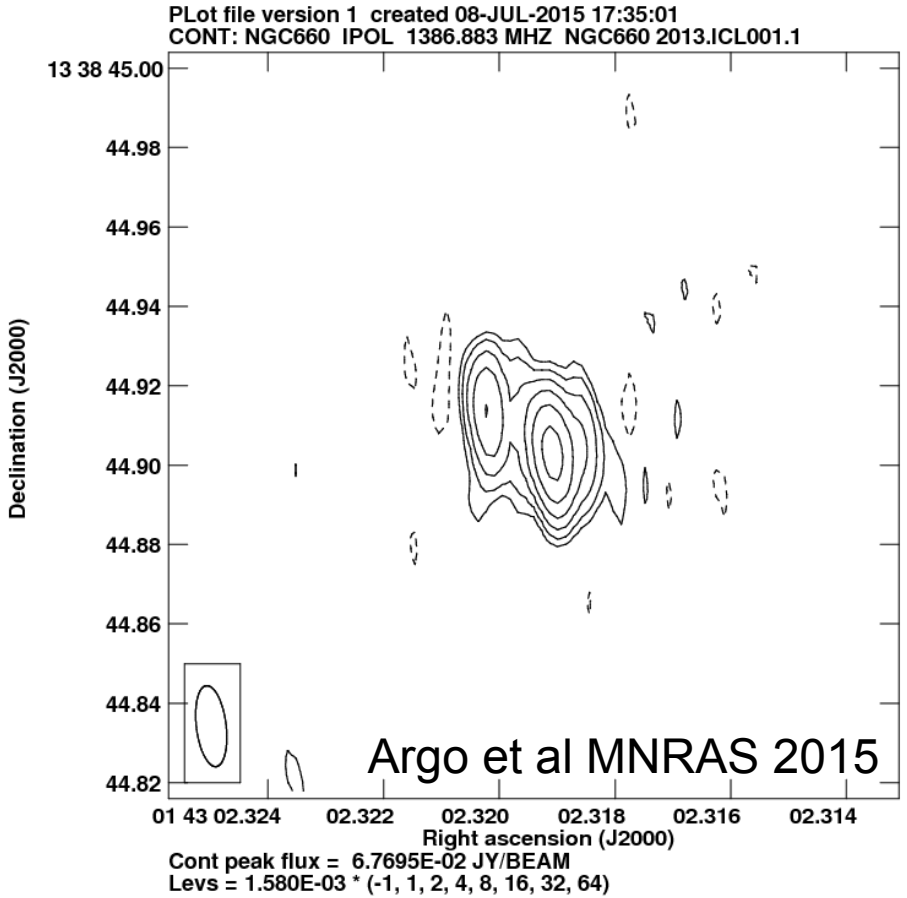
Minchin et al AAS Meeting #221, #157.06

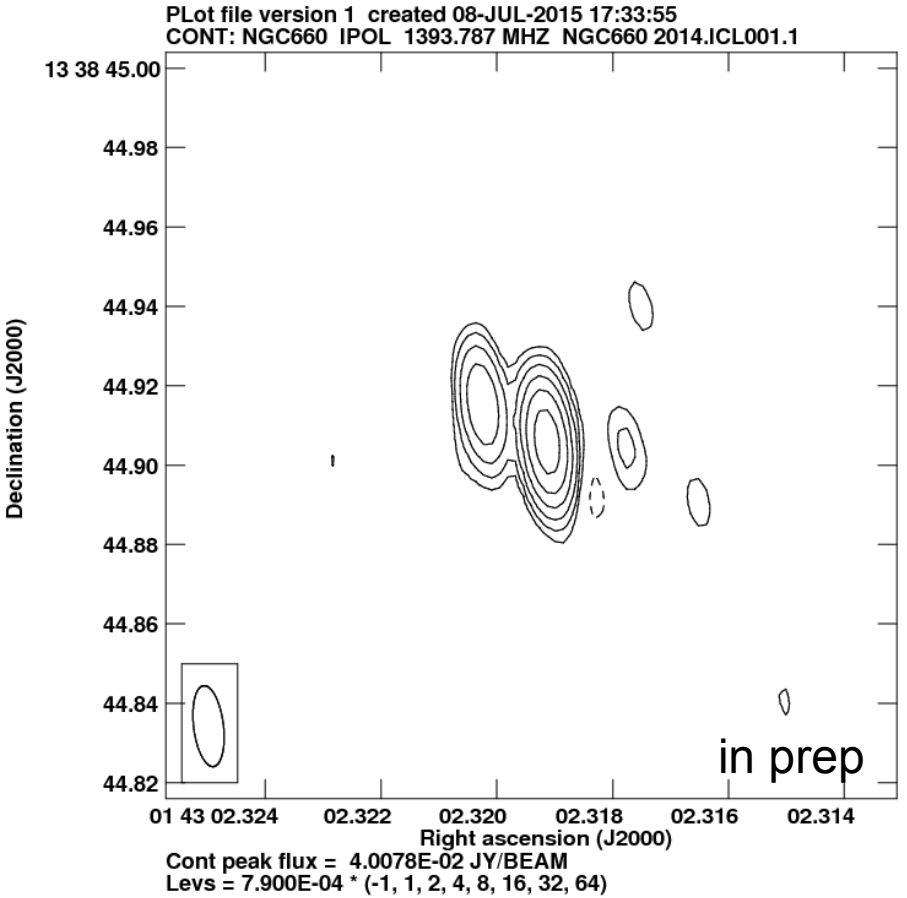
MERLIN archive 1.4GHz





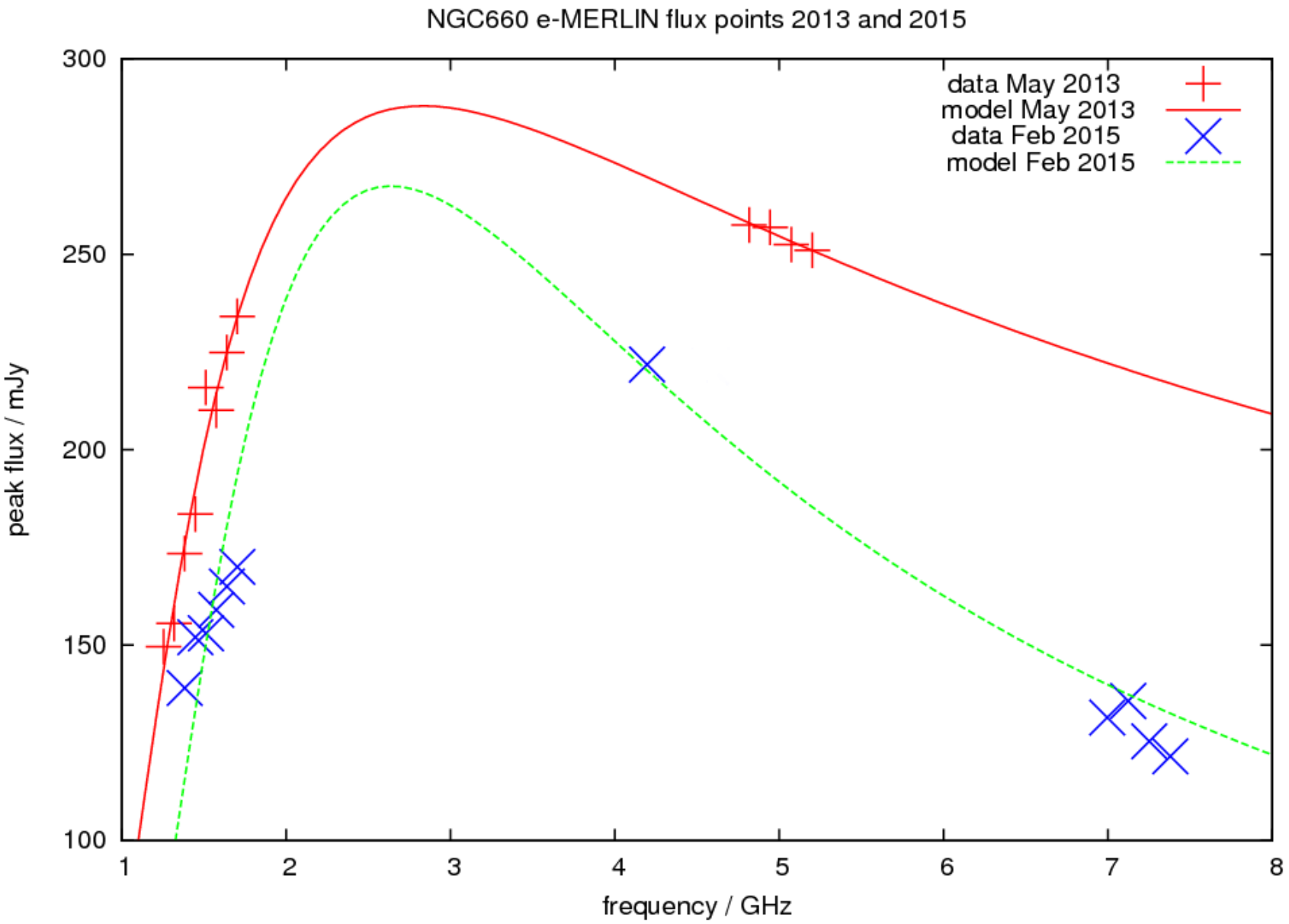
NEW EVN continuum





Tentative position shift: 1.5 mas -> slowing down? October EVN: Watch this space!

e-MERLIN SED


NGC660 e-MERLIN flux points 2013 and 2015
data May 2013
model May 2013
data Feb 2015
model Feb 2015
peak flux / mJy
frequency / GHz
300
250
200
150
100
1
2
3
4
5
6
7
8

USS sources

VLSS WENSS NVSS FIRST

$S_{FIRST} = S_{NVSS}$ ($\pm$ 10%)

$\alpha < -1.2$ (74:325MHz)

Sample: 73 sources

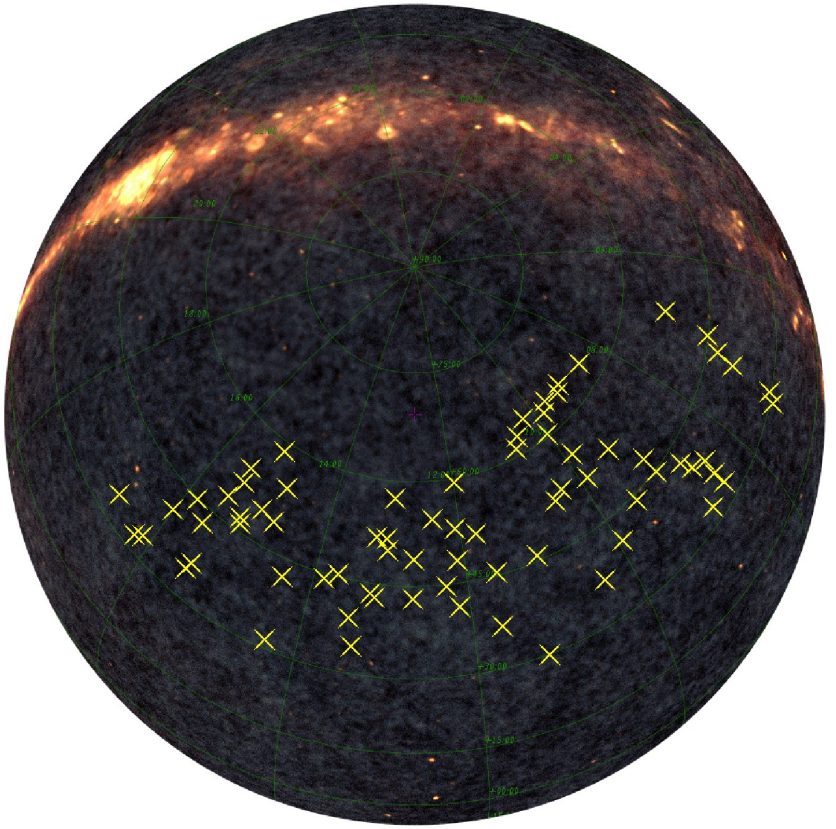
EVN pilot survey:

- 2/4 detected
- Flux recovered

e-MERLIN L-band survey

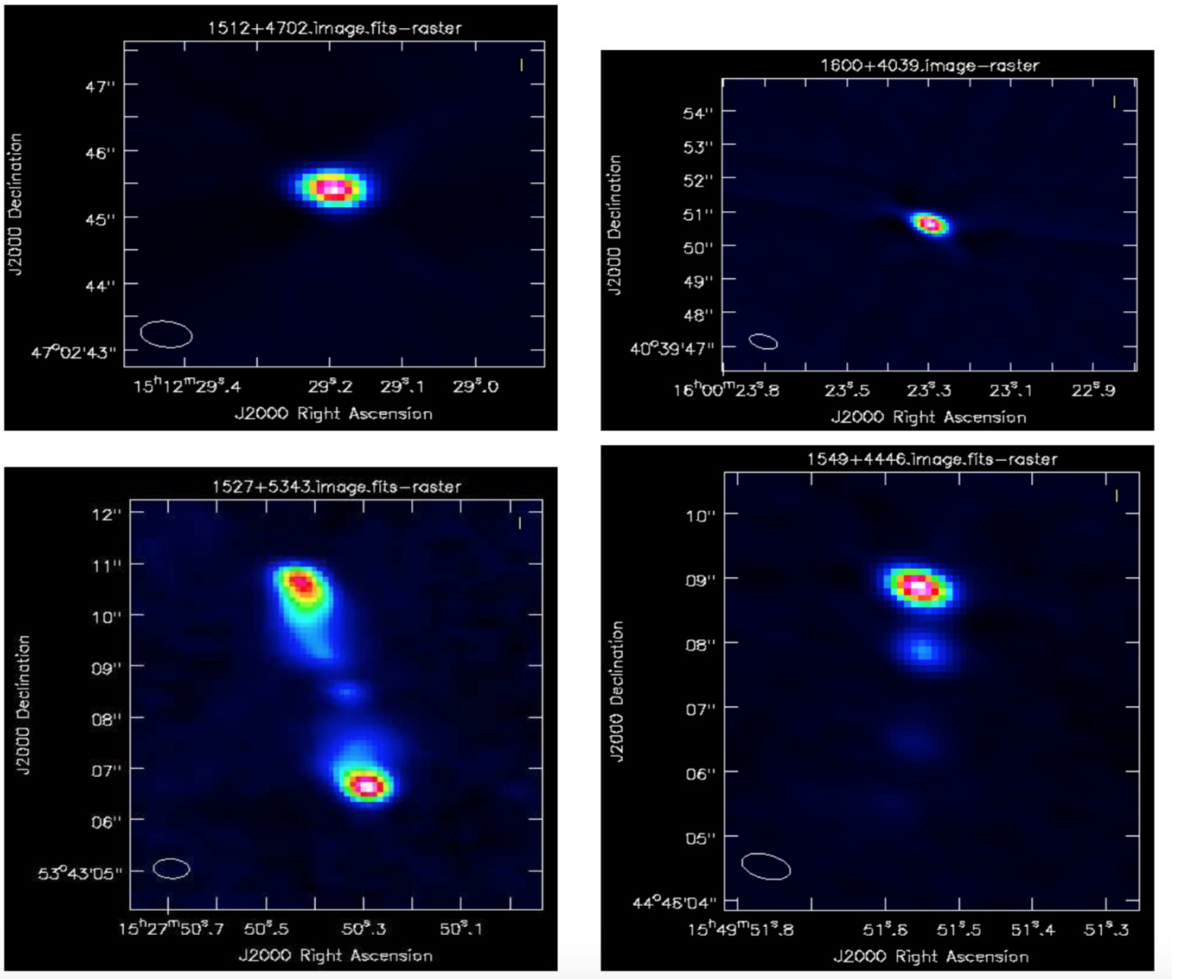
JVLA C-band observed

(e-MERLIN C-band requested...)



Argo et al MNRAS Letters 431 58 (2013)

USS sources

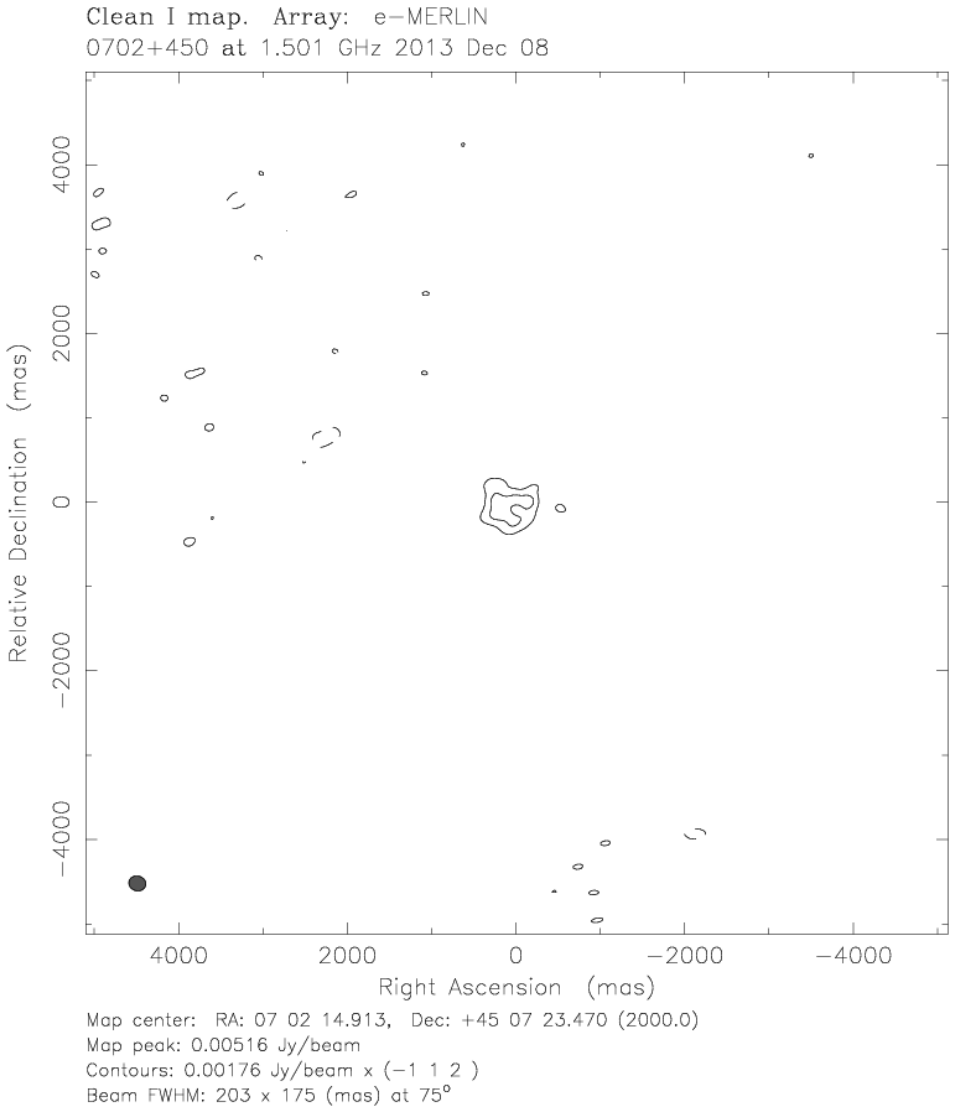


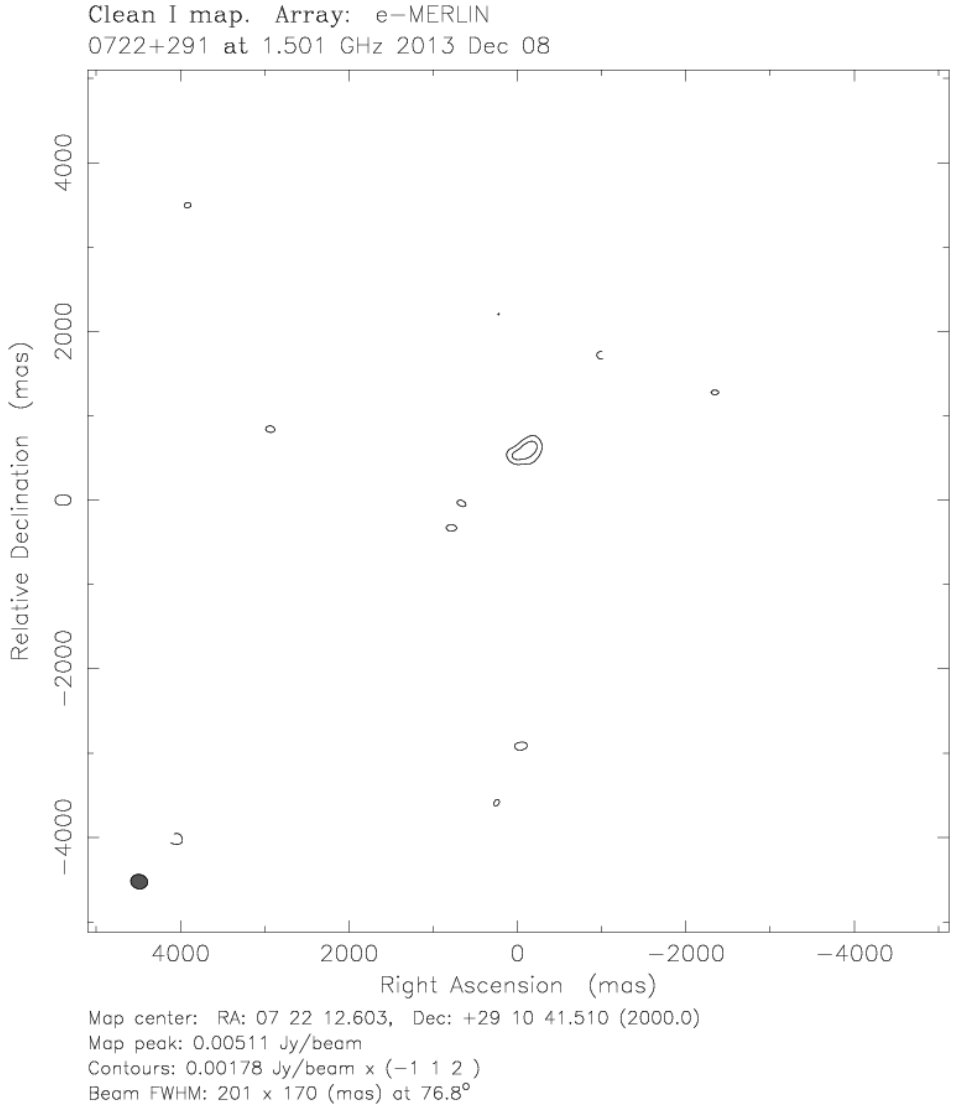
JVLA 5-GHz survey

75% observed
>90% detected(!)
~25% compact at 0.3”

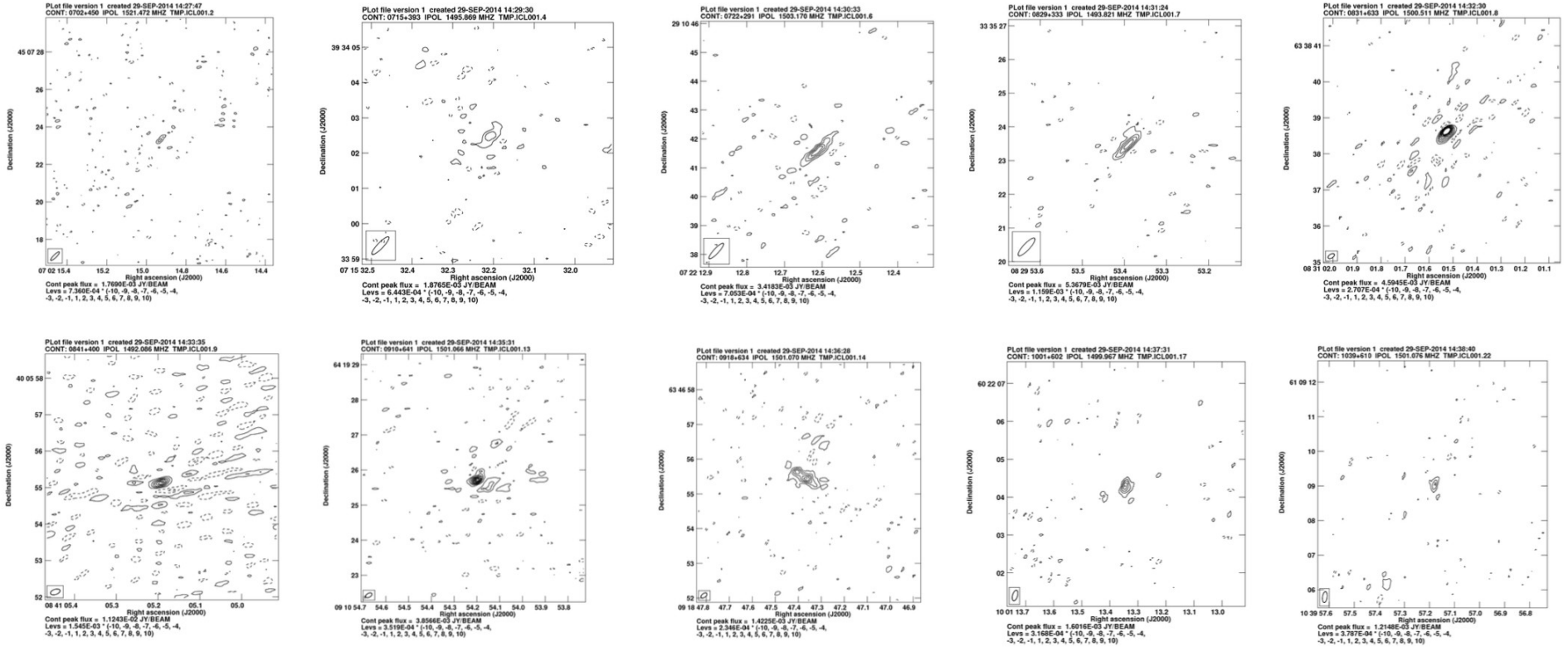
Melania Raffone, Erasmus student 2016
Raffone, Argo et al in prep

Two (12-minute!) detections





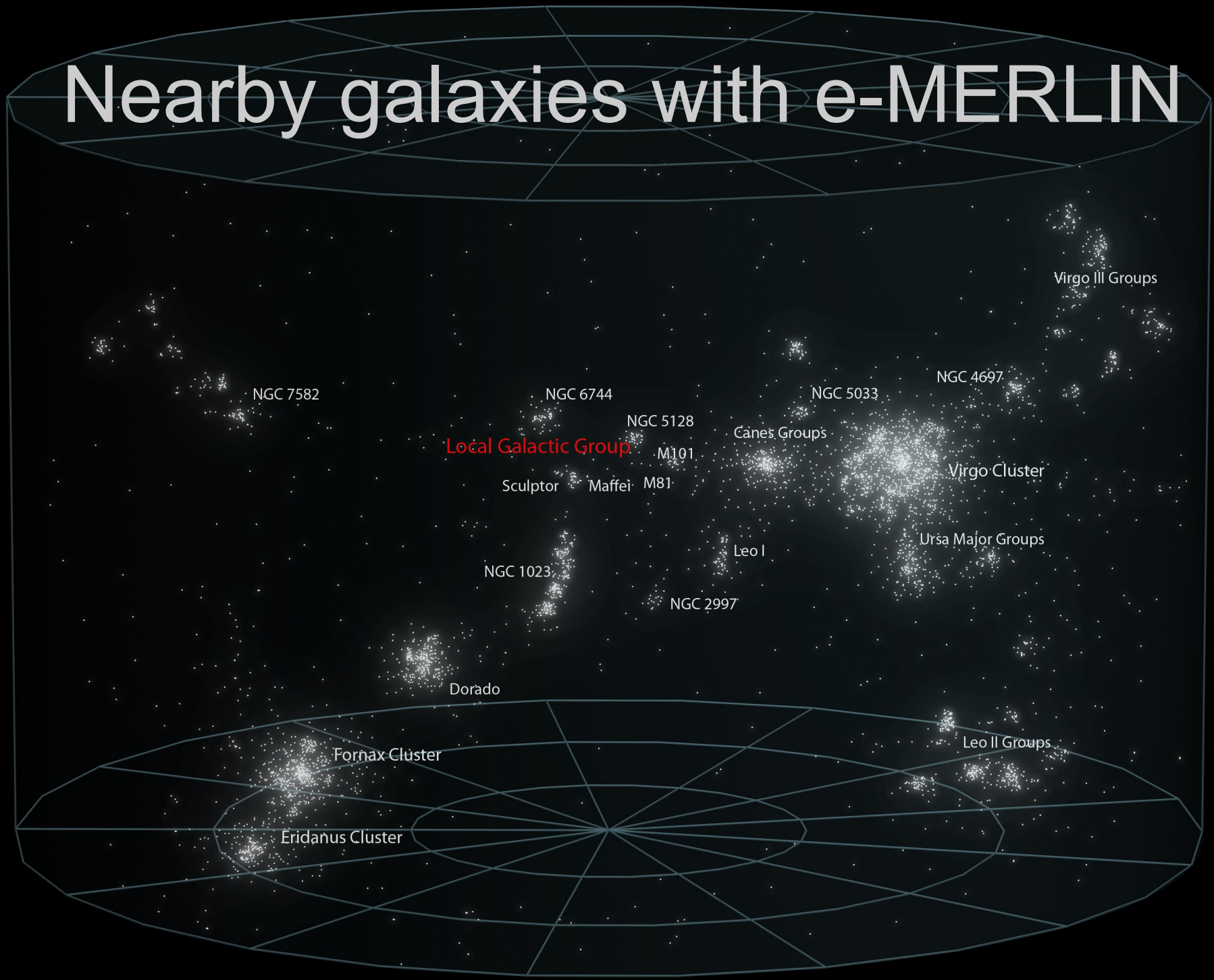
e-MERLIN “snapshot” images



R. Steadman, Nuffield student 2014

50 observed, half detected. 50% compact.
e-MERLIN compact → JVLA AGN-like.
High-z analogues of FRIIs? C-band obs requested :-)

Nearby galaxies with e-MERLIN



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