Plans for an Indian SRC

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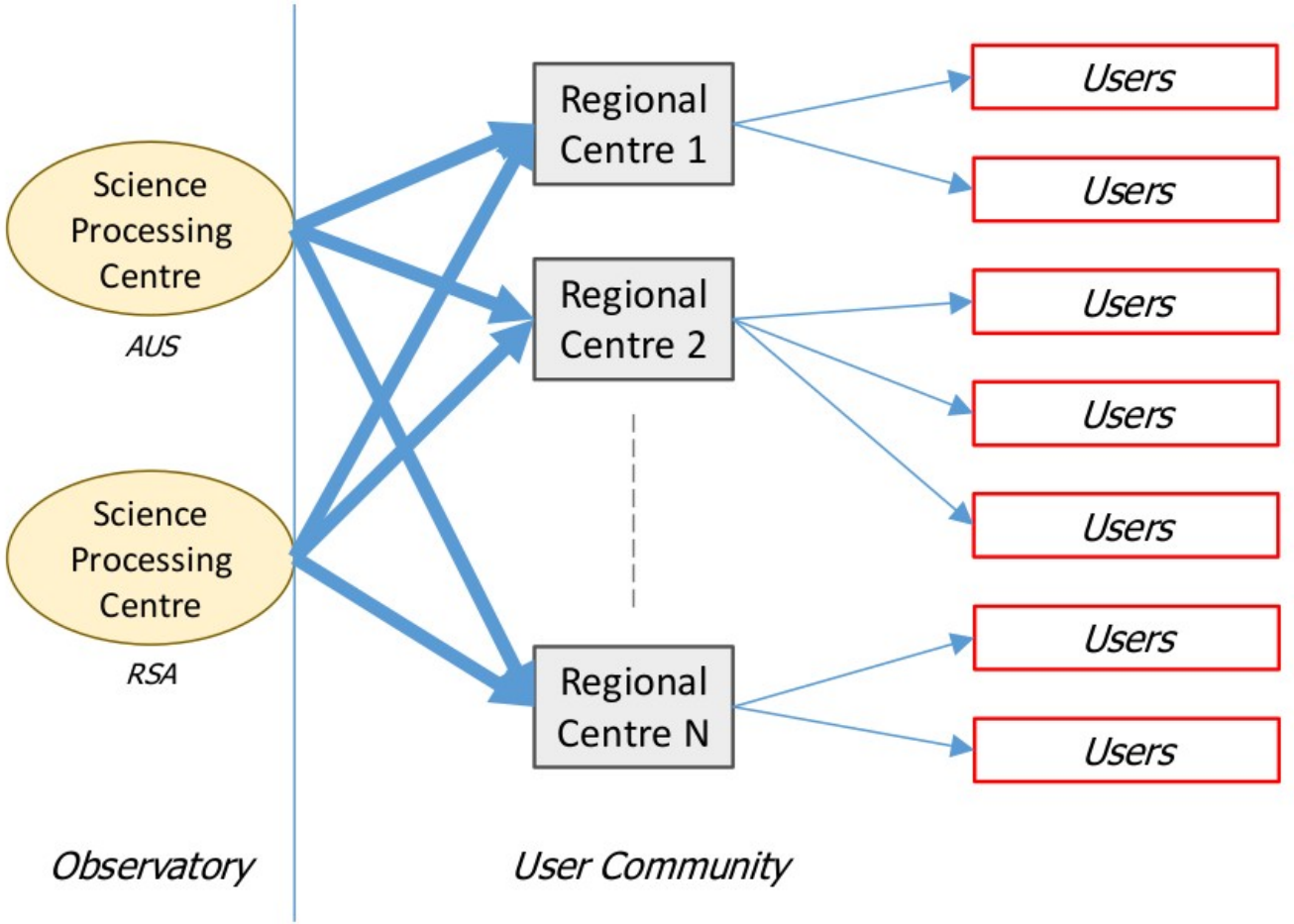
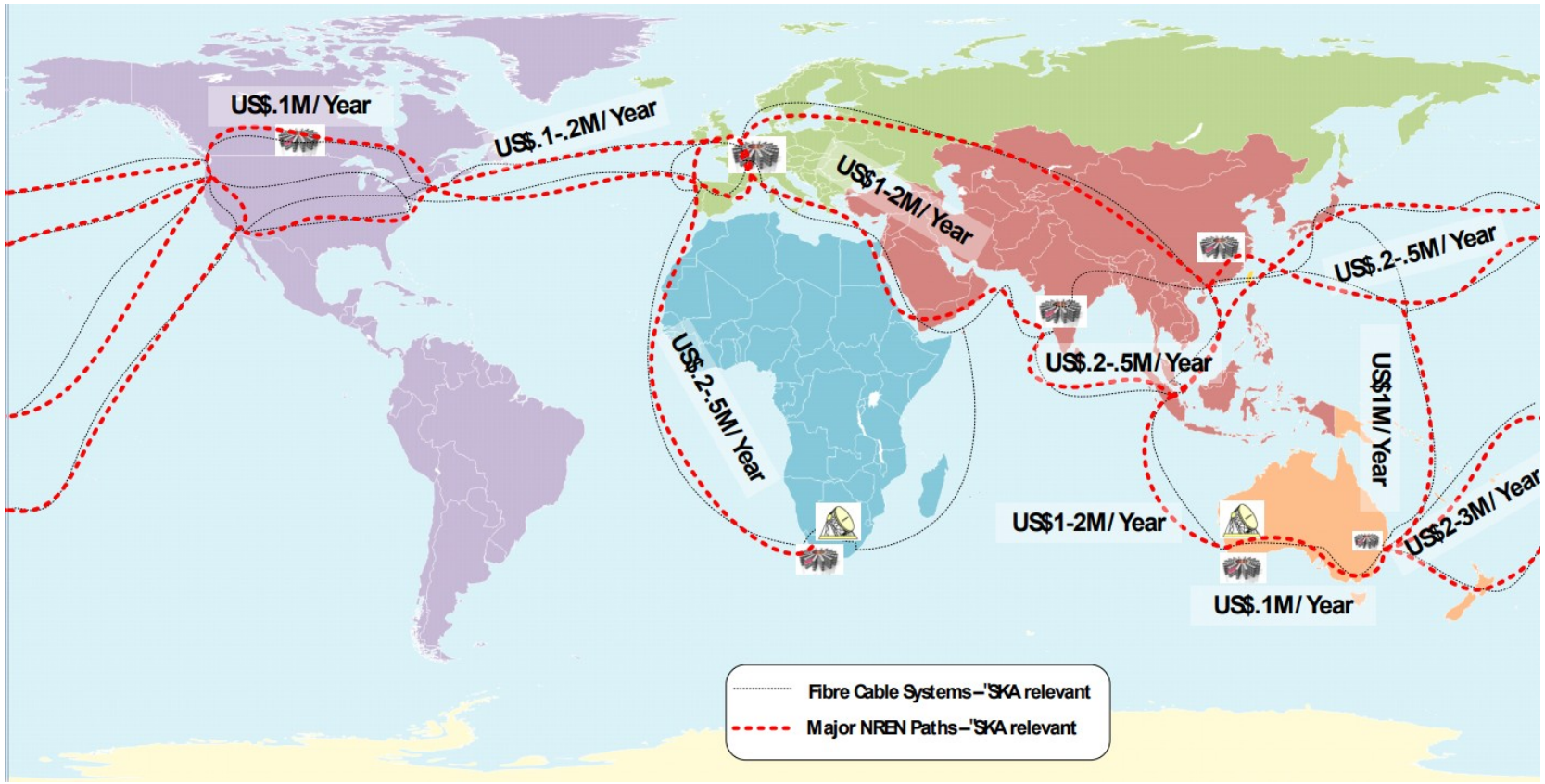
SKA Regional Centres



The SRC network



Indian SRC Plans

- Funding proposal requesting for about 5.5 MEuro over a 4 year period 2019-2023 for a prototype SRC submitted to the government.
- We expect the first tranche of funding (about 700k Euros) to arrive by December.
- We intend to use these funds to buy some storage and compute hardware to be used for pipeline processing SKA precursor data.
- **Prototype SRC activities will initially focus on development and deployment of pipelines for processing of all legacy GMRT/uGMRT data and MWA observations of the Sun (with Divya Oberoi).**
- The new hardware to be purchased now will be housed in an existing data centre.
- In the Indo-Australian context, we would like to set up a dedicated high speed internet connection between NCRA and the Pawsey Centre, Perth for transfer of large volumes of MWA data.

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Imaging the GMRT archive

- All interferometric GMRT observations taken since Cycle 1 in 2002 have been archived
- The GMRT archive on NAPS now hosts >200 TB of interferometric data which are served to users as visibilities. We were looking to provide users with “first look” (worst case) and “science ready” (best case) images for all GMRT observations. A “certifiably bad” tag on data is also useful.
- We use the SPAM pipeline (by Huib Intema) which has been thoroughly tested for the GMRT ADR1 data release at 150 MHz and with many other GMRT datasets at 235, 325, 610 MHz bands.

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The processing factory

- A cluster of desktops configured with the SPAM software stack
- Input visibilities and output images stored on a Petabyte sized DELL Isilon storage systems.
- All processing tracked via Python scripts that use and store processing information into a database.
- The first hardware setup and scripting was designed by a group of undergraduate computer engineering students. We are now working with an industry partner on the production version of the system.

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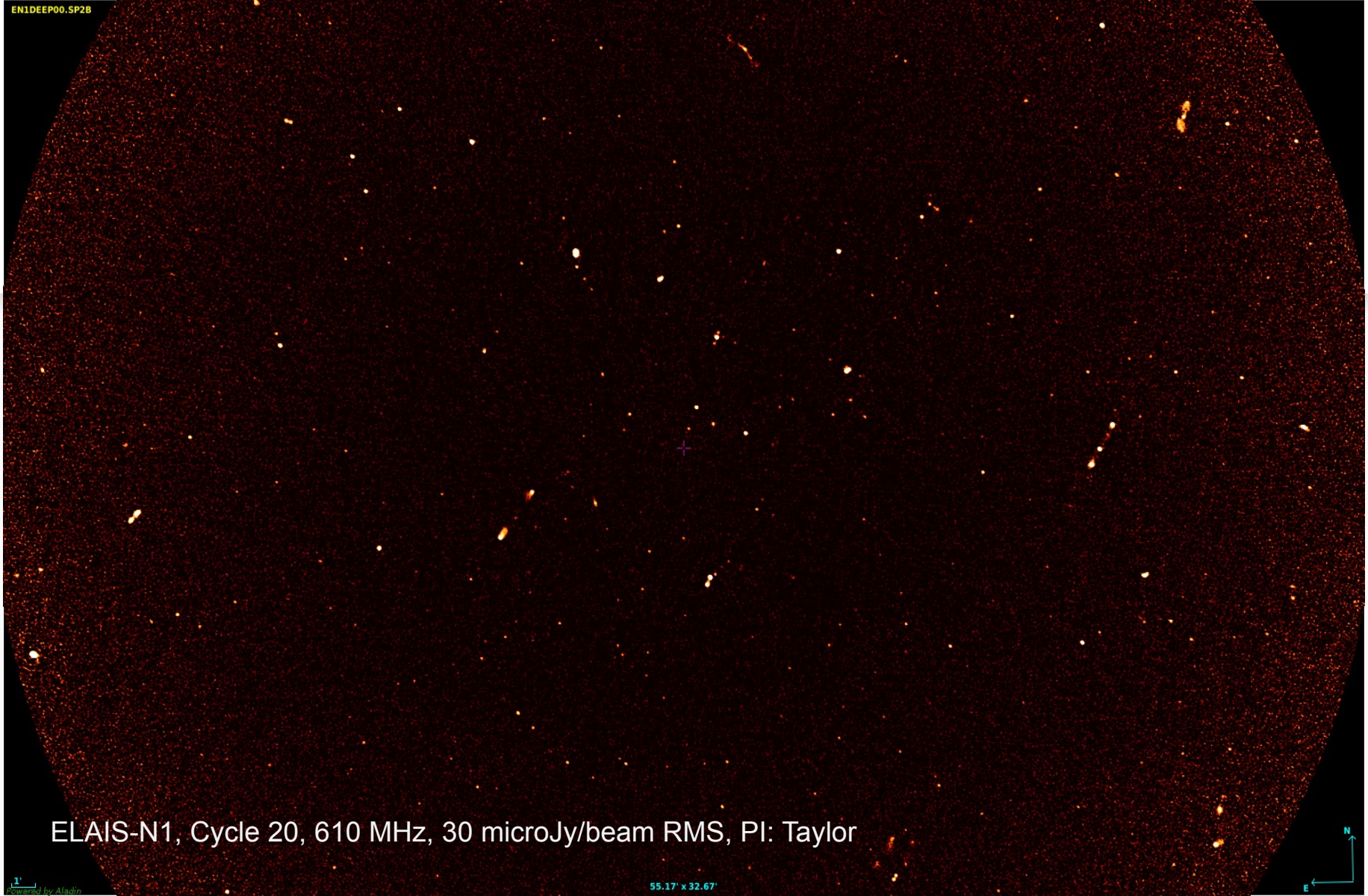
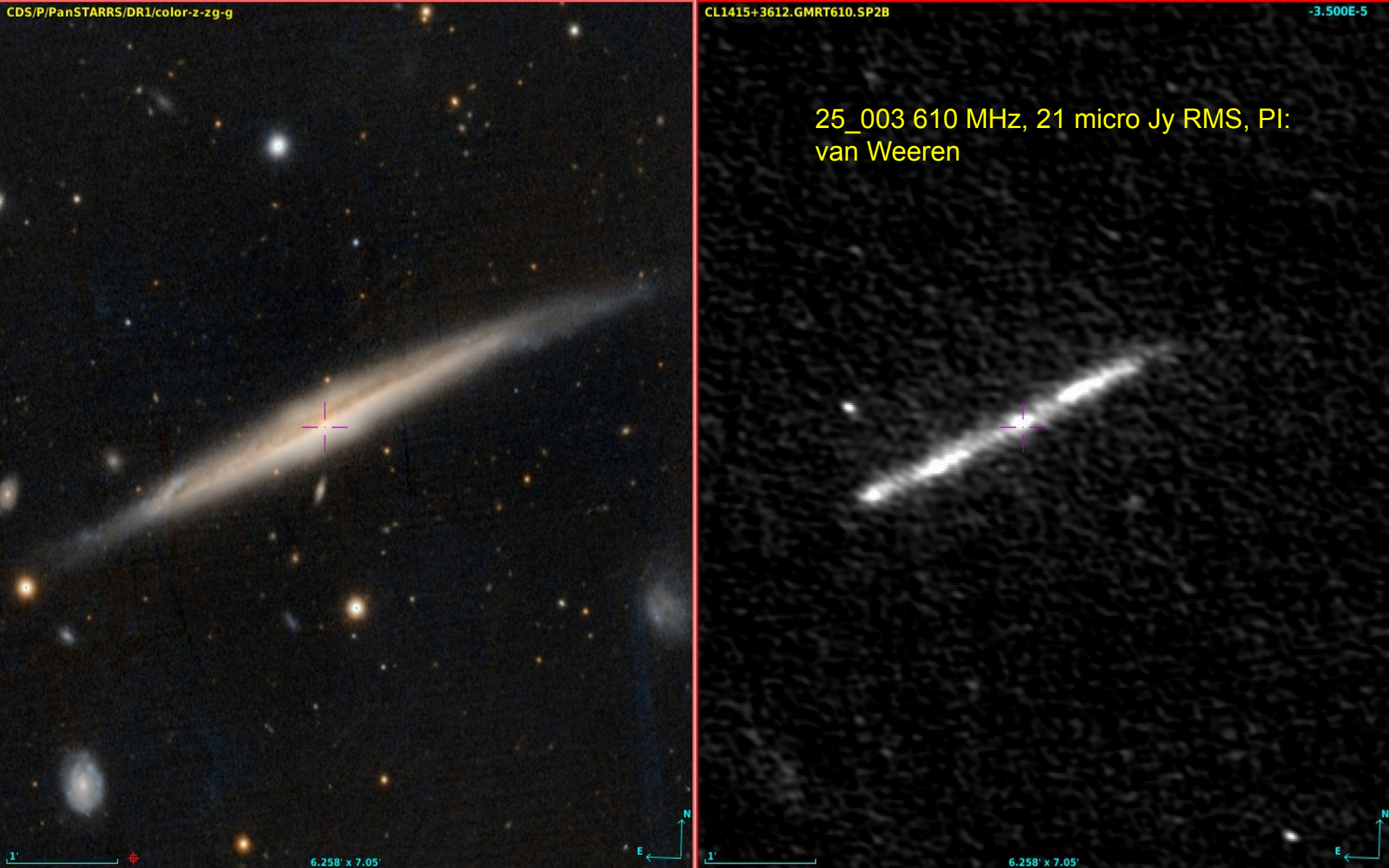
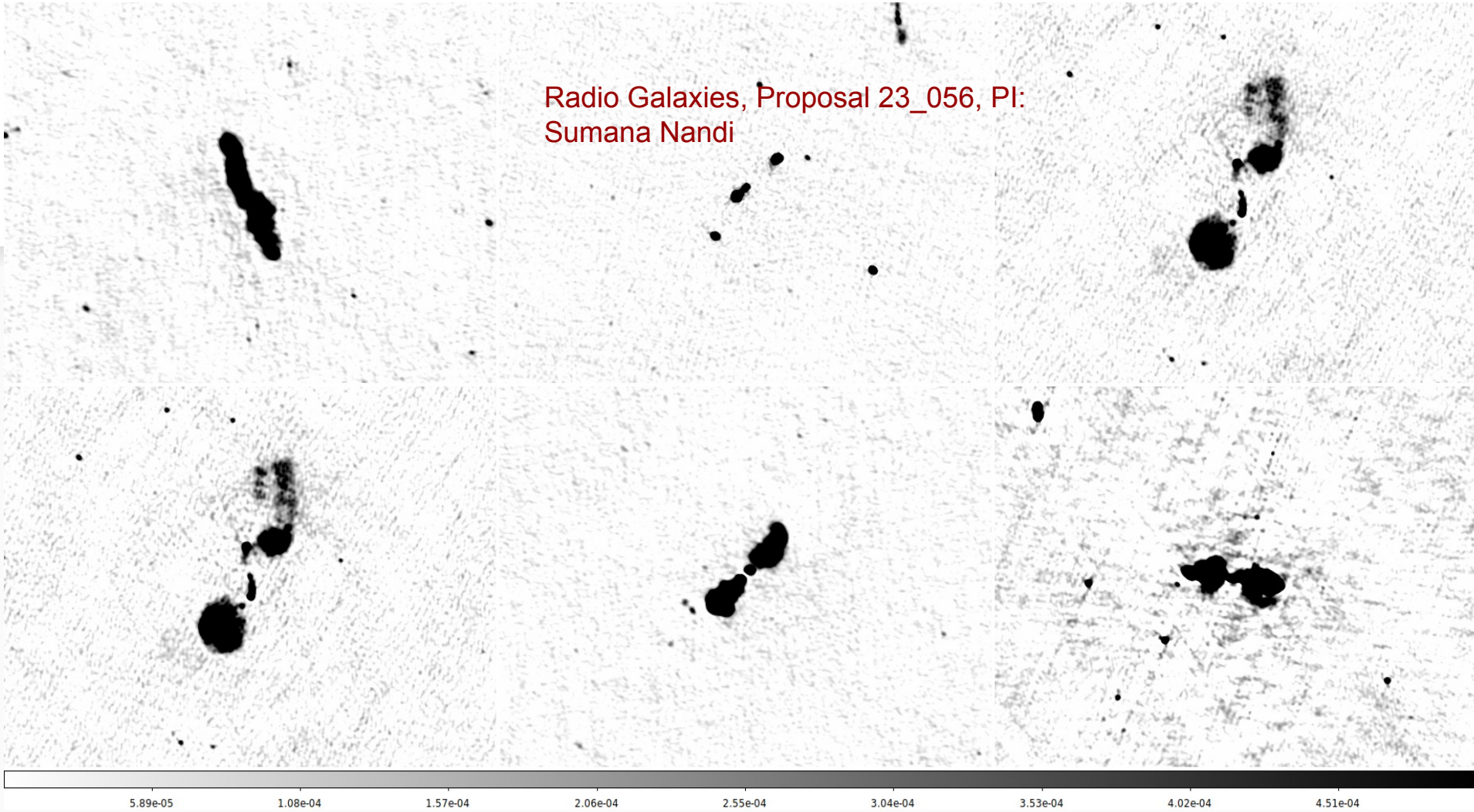
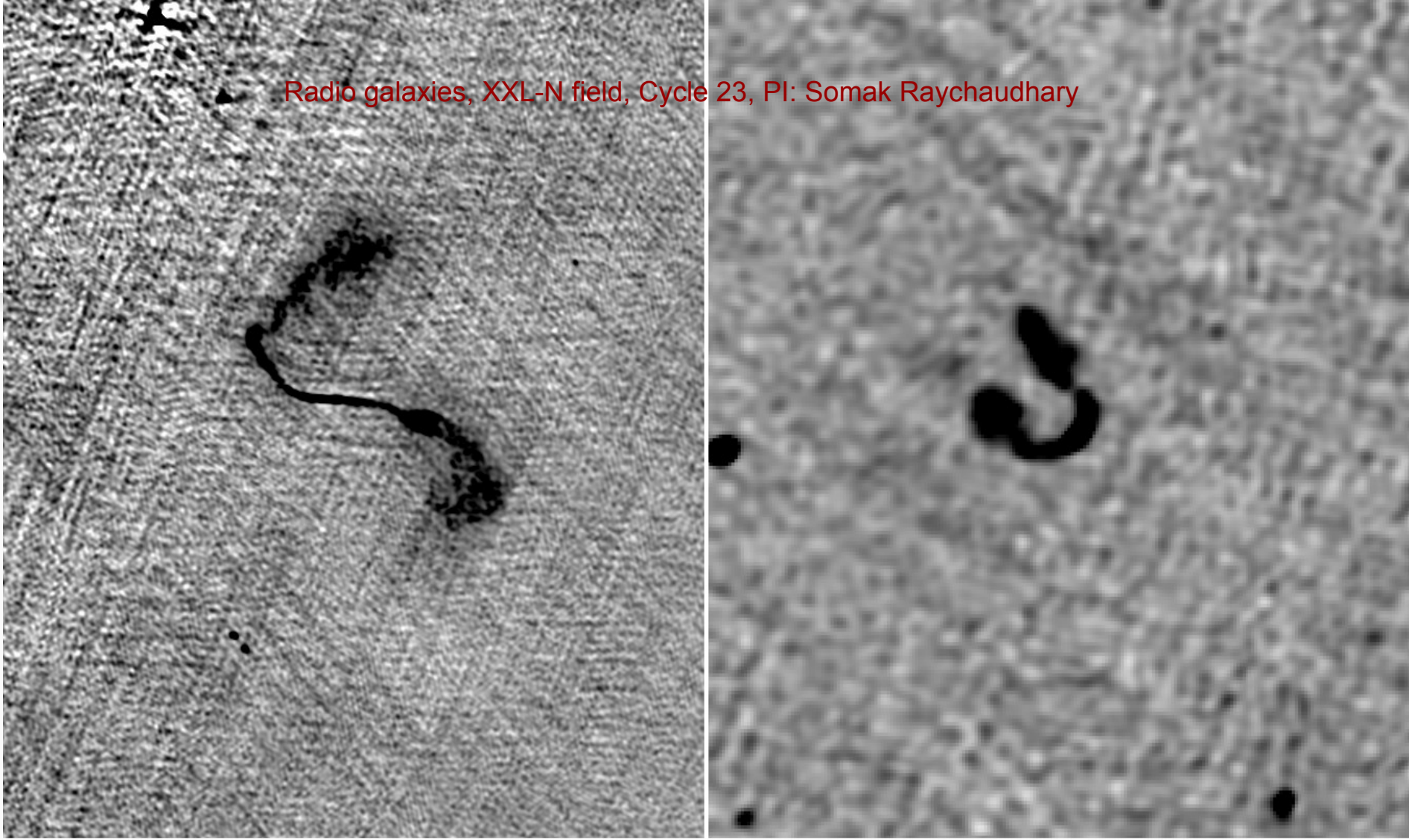
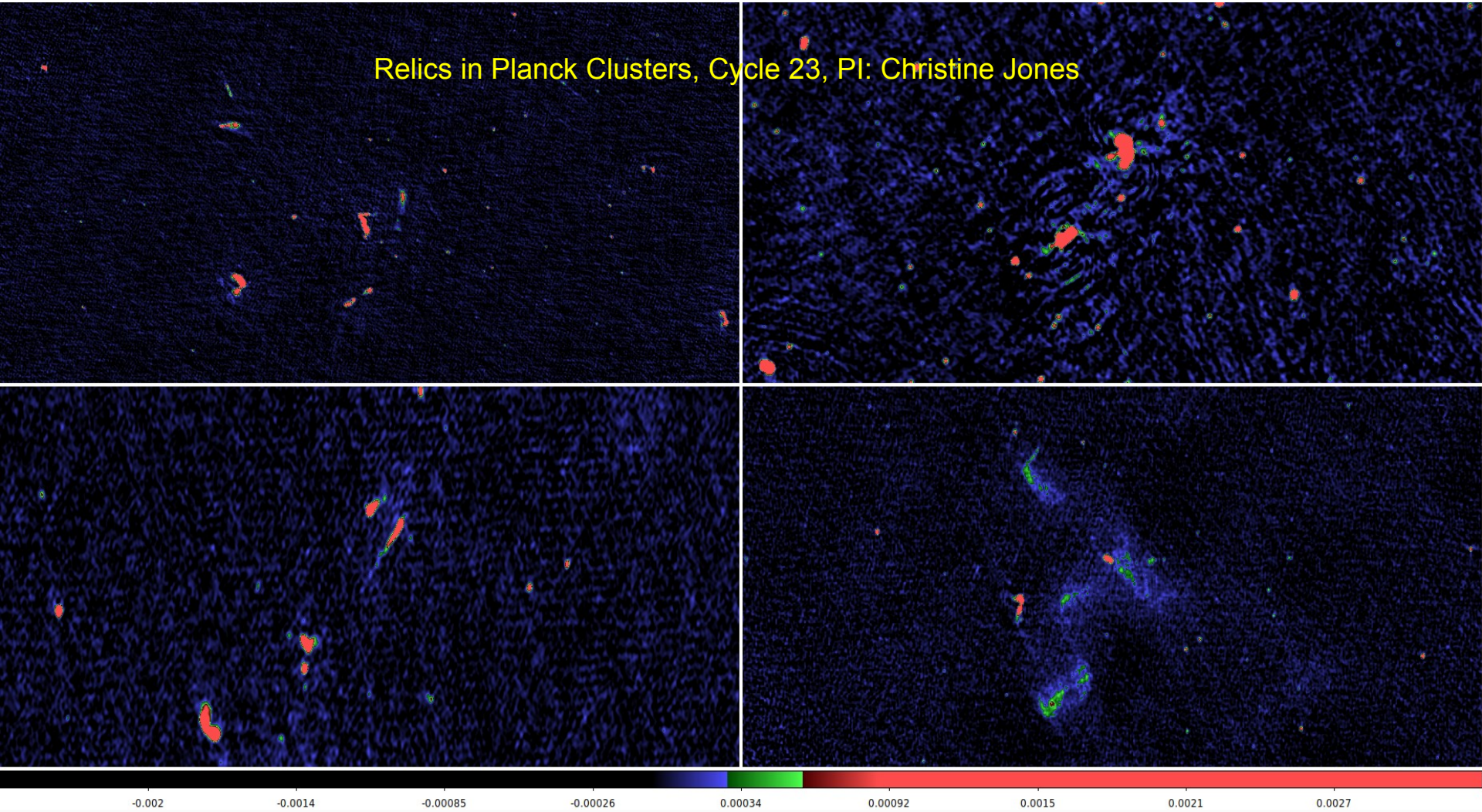
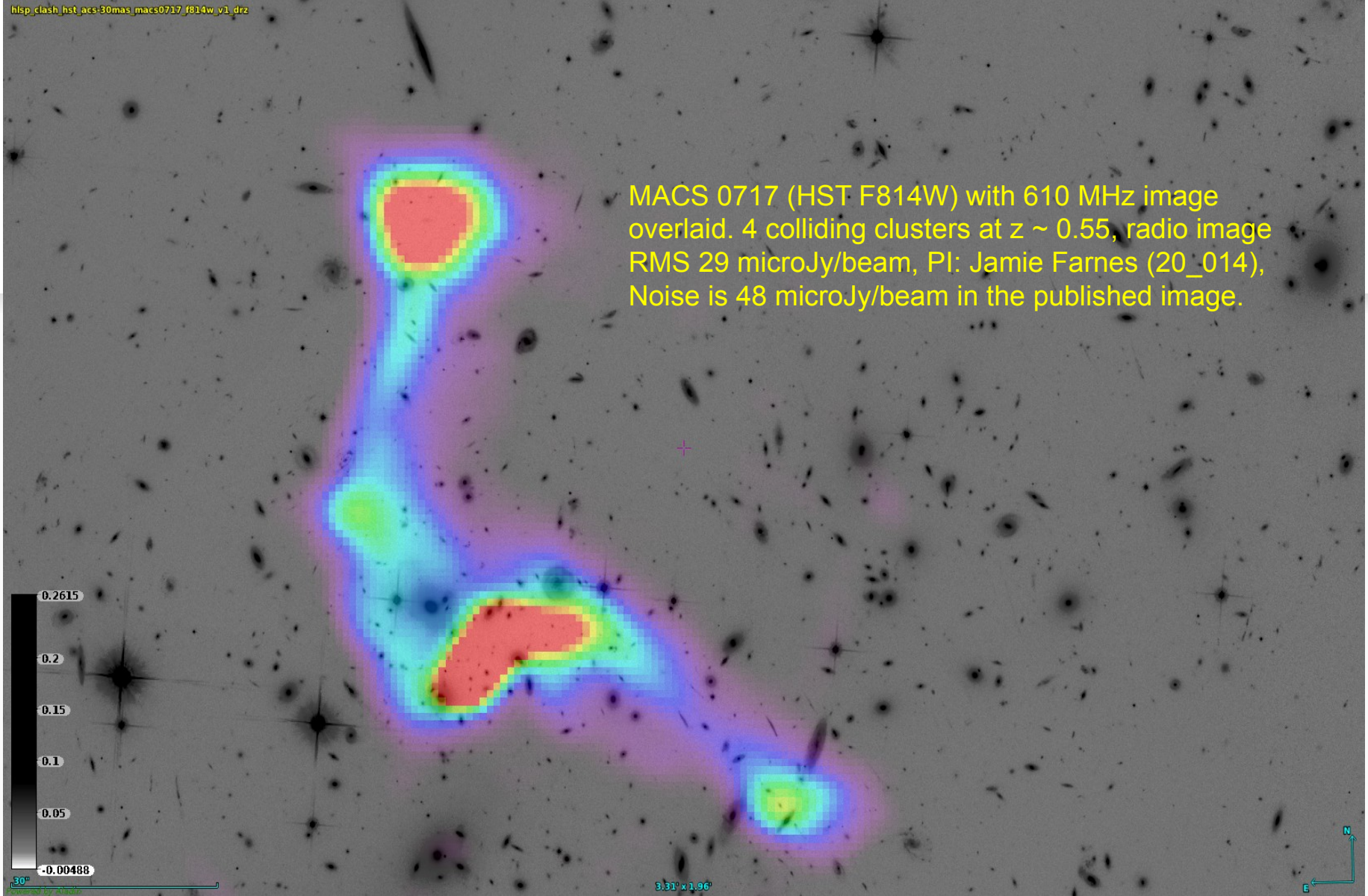

EN1DEEP00.SP2B
ELAIS-N1, Cycle 20, 610 MHz, 30 microJy/beam RMS, PI: Taylor
1'
Powered by Aladin
55.17' x 32.67'
N
E

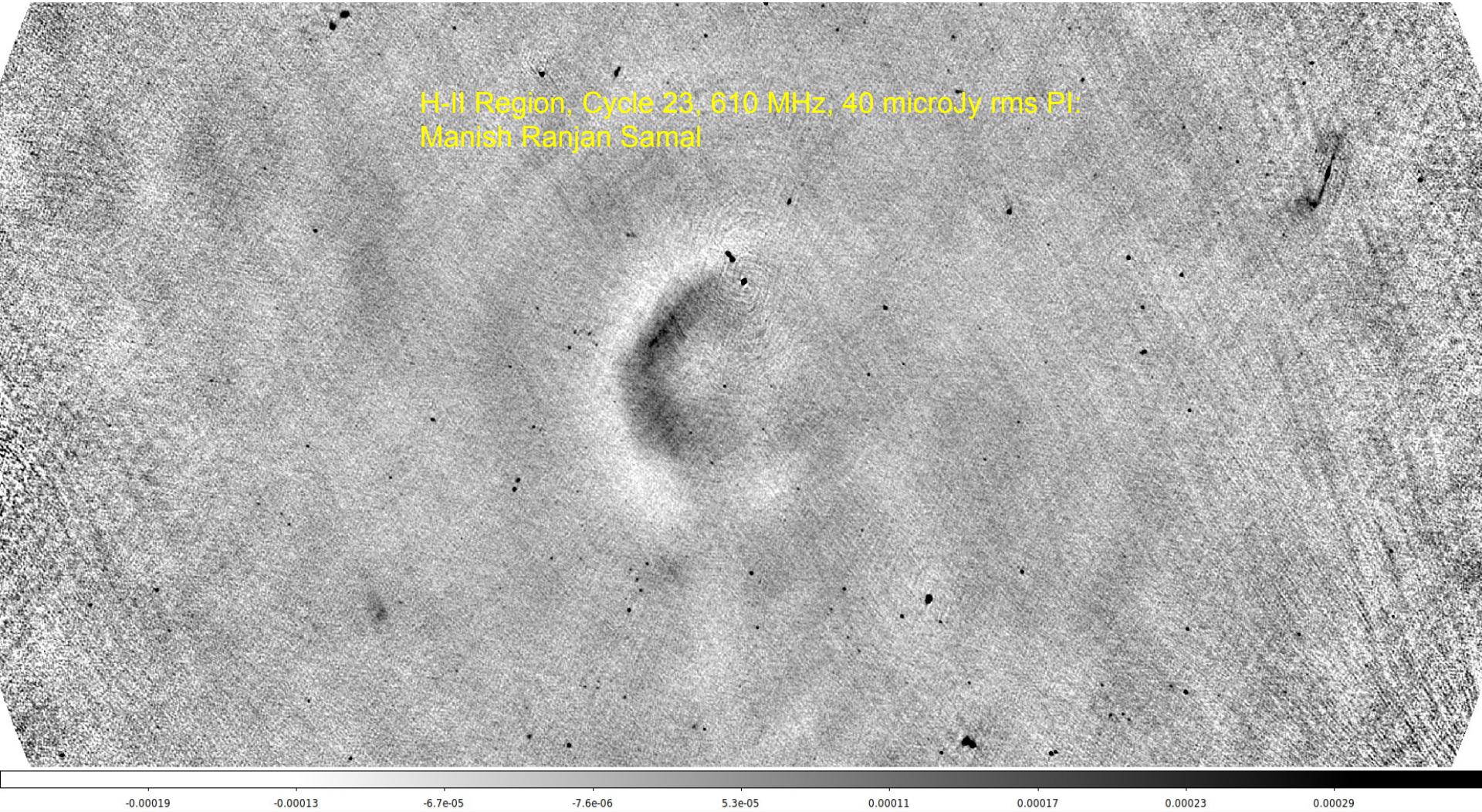

CDS/P/PanSTARRS/DR1/color-z-zg-g
CL1415+3612.GMRT610.SP2B
-3.500E-5
25_003 610 MHz, 21 micro Jy RMS, PI: van Weeren
1'
6.258' x 7.05'
N
E
1'
6.258' x 7.05'
N
E

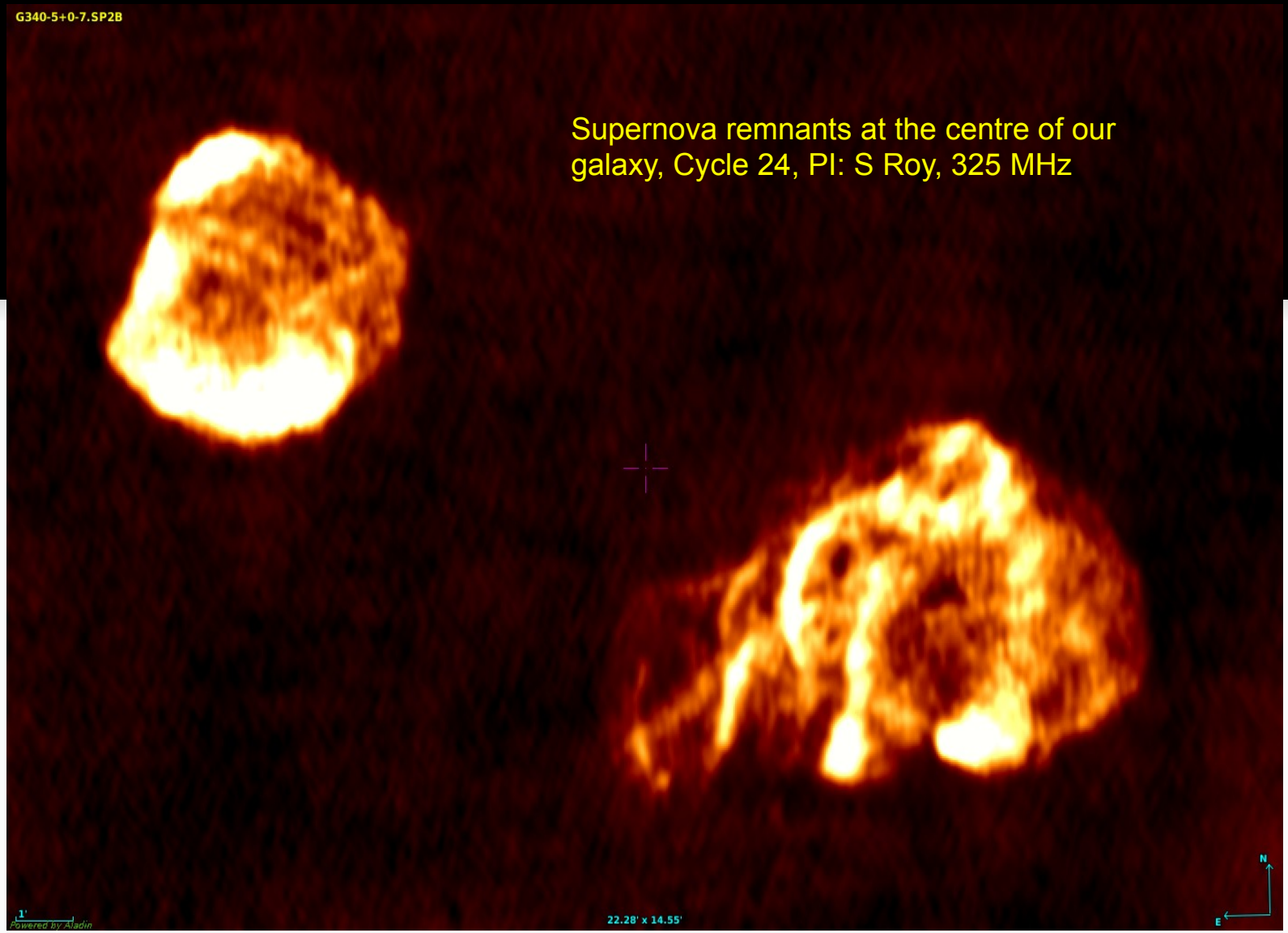

Radio Galaxies, Proposal 23_056, PI:
Sumana Nandi
5.89e-05
1.08e-04
1.57e-04
2.06e-04
2.55e-04
3.04e-04
3.53e-04
4.02e-04
4.51e-04

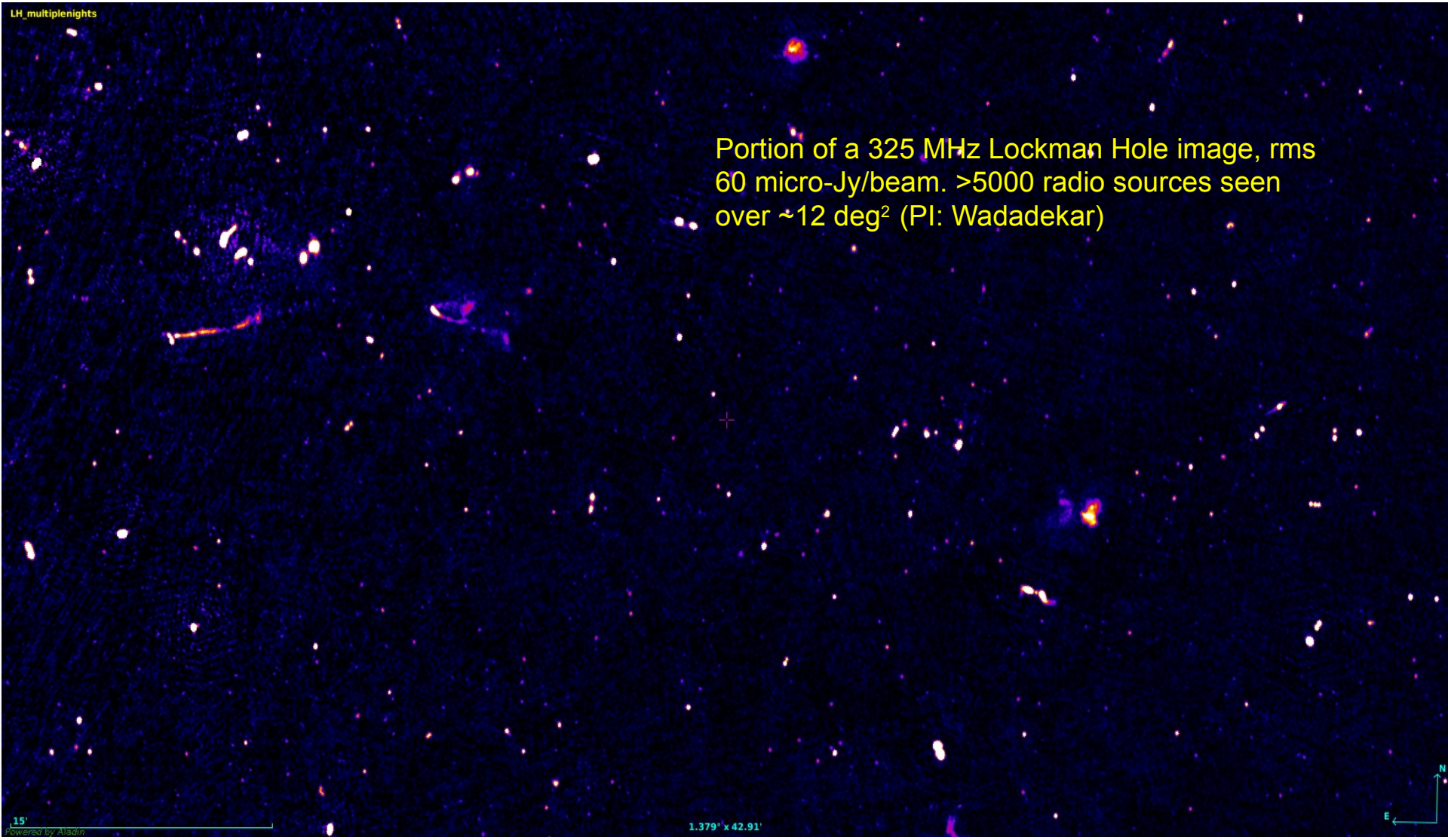

Radio galaxies, XXL-N field, Cycle 23, PI: Somak Raychaudhary
-0.00019
-0.00014
-7.7e-05
-1.8e-05
4.2e-05
0.0001
0.00016
0.00022
0.00028


Relics in Planck Clusters, Cycle 23, PI: Christine Jones
-0.002
-0.0014
-0.00085
-0.00026
0.00034
0.00092
0.0015
0.0021
0.0027

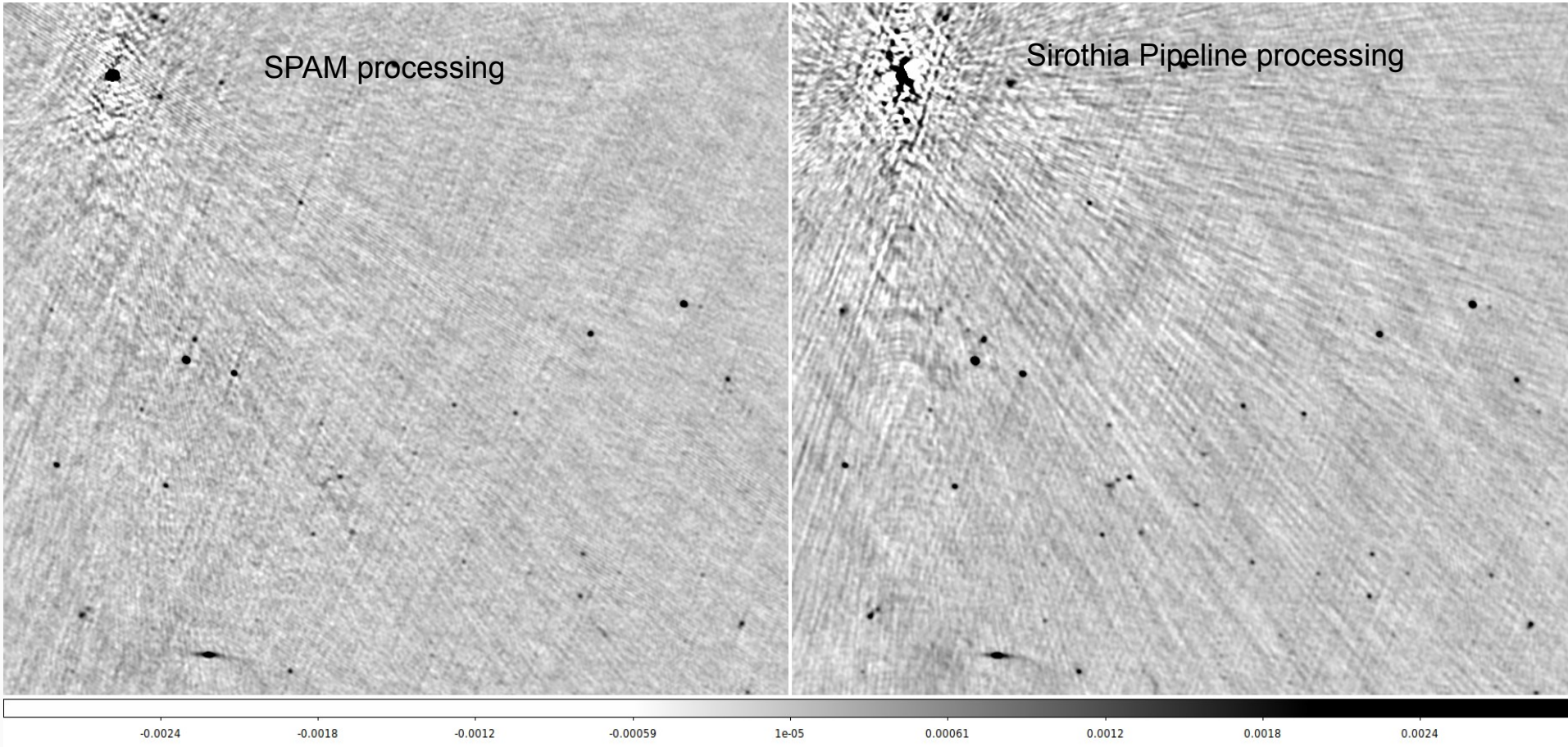

hlsp_clash_hst_acs-30mas_macs0717_f814w_v1_drz
MACS 0717 (HST F814W) with 610 MHz image overlaid. 4 colliding clusters at z ~ 0.55, radio image RMS 29 microJy/beam, PI: Jamie Farnes (20_014), Noise is 48 microJy/beam in the published image.
0.2615
0.2
0.15
0.1
0.05
-0.00488
30"
3.31' x 1.96'
N
E


H-II Region, Cycle 23, 610 MHz, 40 microJy rms PI:
Manish Ranjan Samal
-0.00019
-0.00013
-6.7e-05
-7.6e-06
5.3e-05
0.00011
0.00017
0.00023
0.00029


G340-5+0-7.SP2B
Supernova remnants at the centre of our galaxy, Cycle 24, PI: S Roy, 325 MHz
1'
Powered by Aladin
22.28' x 14.55'
N
E


LH_multiplenights
Portion of a 325 MHz Lockman Hole image, rms 60 micro-Jy/beam. >5000 radio sources seen over ~12 deg^2 (PI: Wadadekar)
15'
Powered by Aladin
1.379° x 42.91'
N
E

XMMLSS field, 325 MHz, Cycle 20, PI: Wadadekar



What we are doing now

- Processing all cycles with GHB and GSB data one by one
- Process data in 150, 240, 325, 610 MHz bands; skipping L band for now
- Only processing data with bandwidth >= 16 MHz
- Doing manual tests with a variety of images in all bands compared to images
- prepared by hand or with other pipelines to verify flux calibration and image quality
- Developing Automated Quality Control with some quality flags to warn users
- Generating PyBDSF component catalogs
- Producing HiPS images in each band for easy visualisation
- **Integrate all outputs into NAPS.** Pilot release of two cycles 25+26 will happen soon
- Some testing and refactoring of uGMRT pipelines has commenced.

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