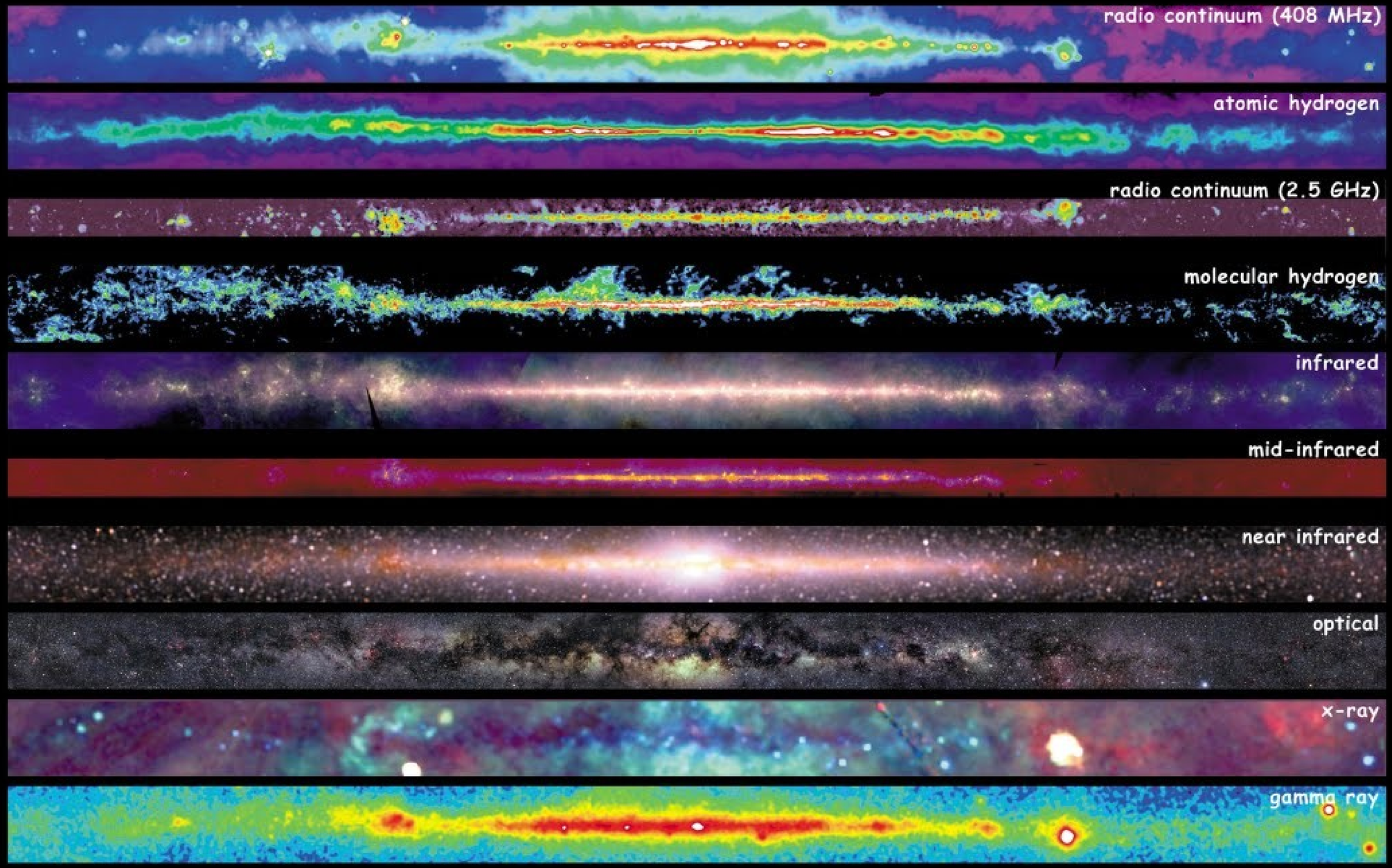
Our Milky Way

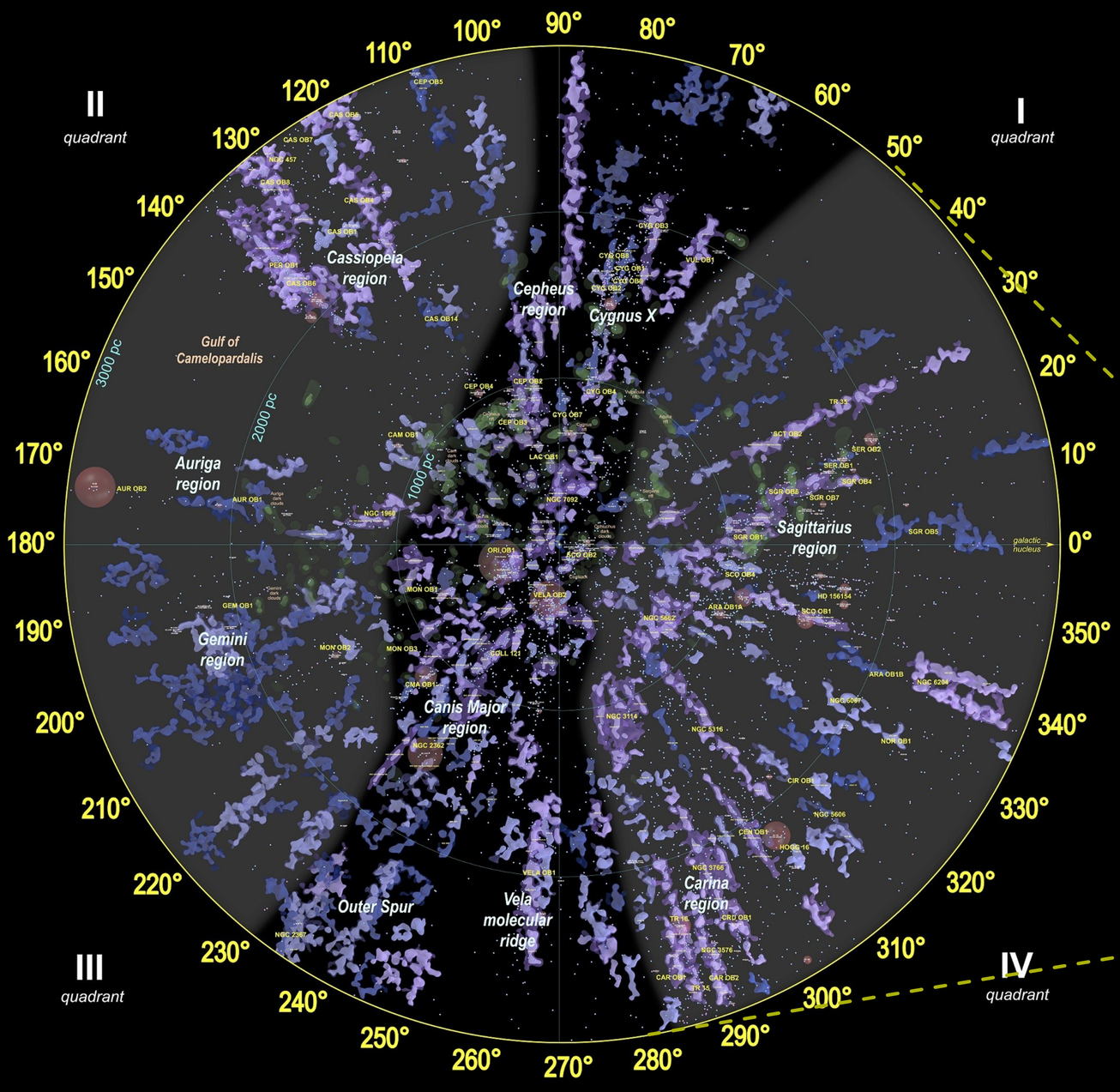


The Milky Way Galaxy


the Galactic center is here
We are here


the Galactic center is here
8,000 parsecs away
We are here

Gaia Milky Way map within 3000 pc (10000 ly)



This map uses density isosurfaces computed from data measured by the European Space Agency's Gaia astrometry satellite to display the concentrations of hot (O,B, and early A class) stars within 3 thousand parsecs or about 10 thousand light years from the Sun. Also on this map are dust clouds; about 5000 extremely hot ionizing stars; and HII regions, red glowing clouds of hydrogen gas that have been ionized by the intense ultraviolet radiation emitted by these hot stars.

- Regions containing many ionizing stars
- Regions containing some ionizing stars
- Regions containing few or no ionizing stars
- Dust
- O-class or Wolf-Rayet ionizing stars
- B-class (B0-B3) ionizing stars
- HII regions

This work has made use of data from the European Space Agency (ESA) mission Gaia (http://www.cosmos.esa.int/gaia), processed by the Gaia Data Processing and Analysis Consortium (DPAC, http://www.cosmos.esa.int/web/gaia/dpac/consortium).

Funding for the DPAC has been provided by national institutions, in particular the institutions participating in the Gaia Multilateral Agreement.

This work has made use of the SIMBAD database, operated at CDS, Strasbourg, France.

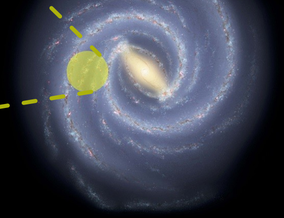
Uses Gaia DR2 with error/parallax < 0.1. HII region positions computed from the median distance to known ionizing stars.

OB association positions computed from the median distance to the member stars given in the data set first described in:

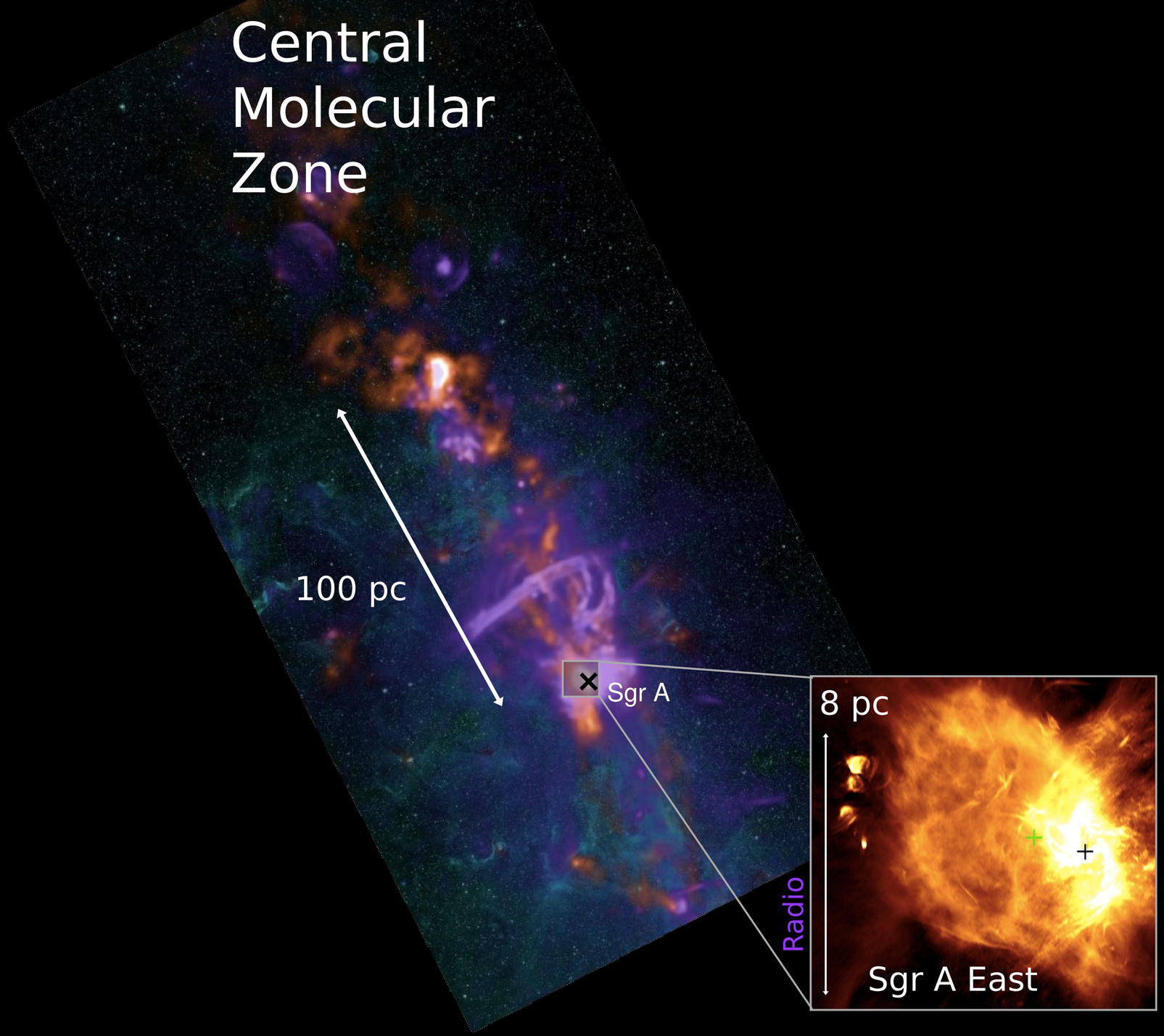
Humphreys, R. M. *Studies of luminous stars in nearby galaxies. I. Supergiants and O stars in the Milky Way.* Astrophysical Journal, Suppl. Ser., Vol. 38, p. 309 - 350

Dust data from:
Lallement, R.; Capitanio, L.; Ruiz-Dern, L.; Danielski, C.; Babusiaux, C.; Vergely, J. L.; Elyajouri, M.; Arenou, F.; Leclerc, N. *3D maps of interstellar dust in the Local Arm: using Gaia, 2MASS and APOGEE-DR14.* (https://arxiv.org/abs/1804.06060)

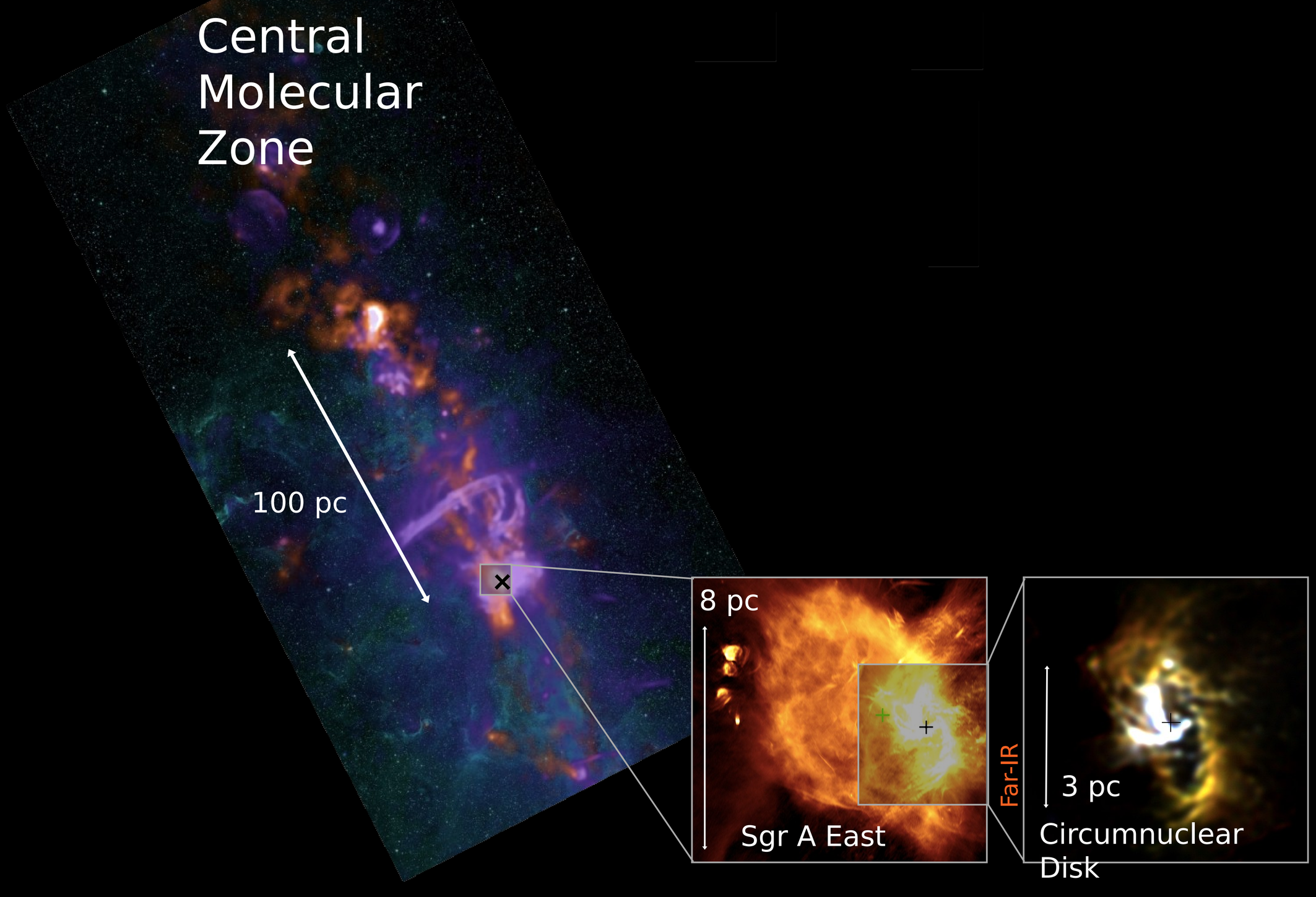
Galaxy Map
http://galaxymap.org
Twitter: @galaxy_map

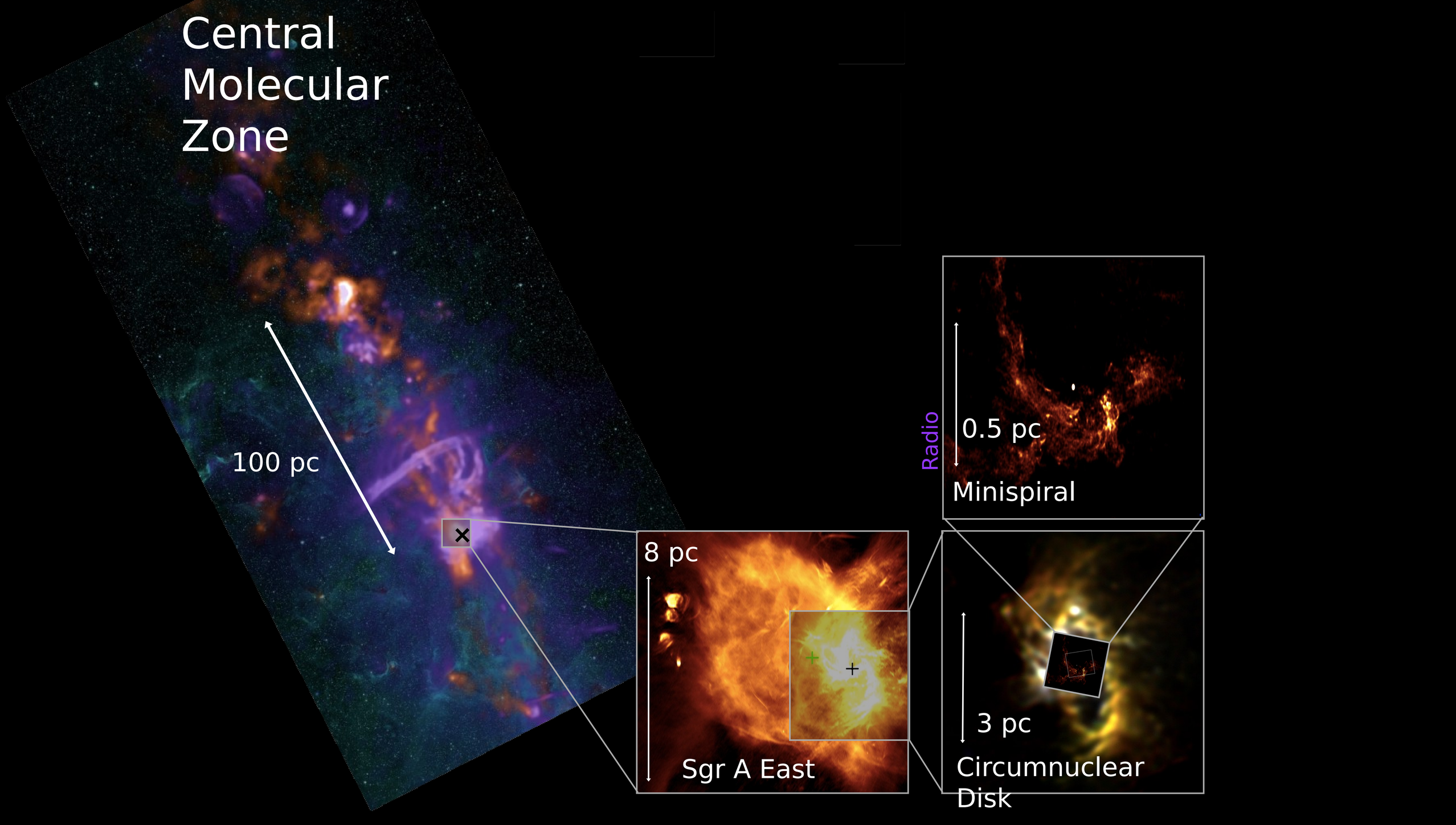


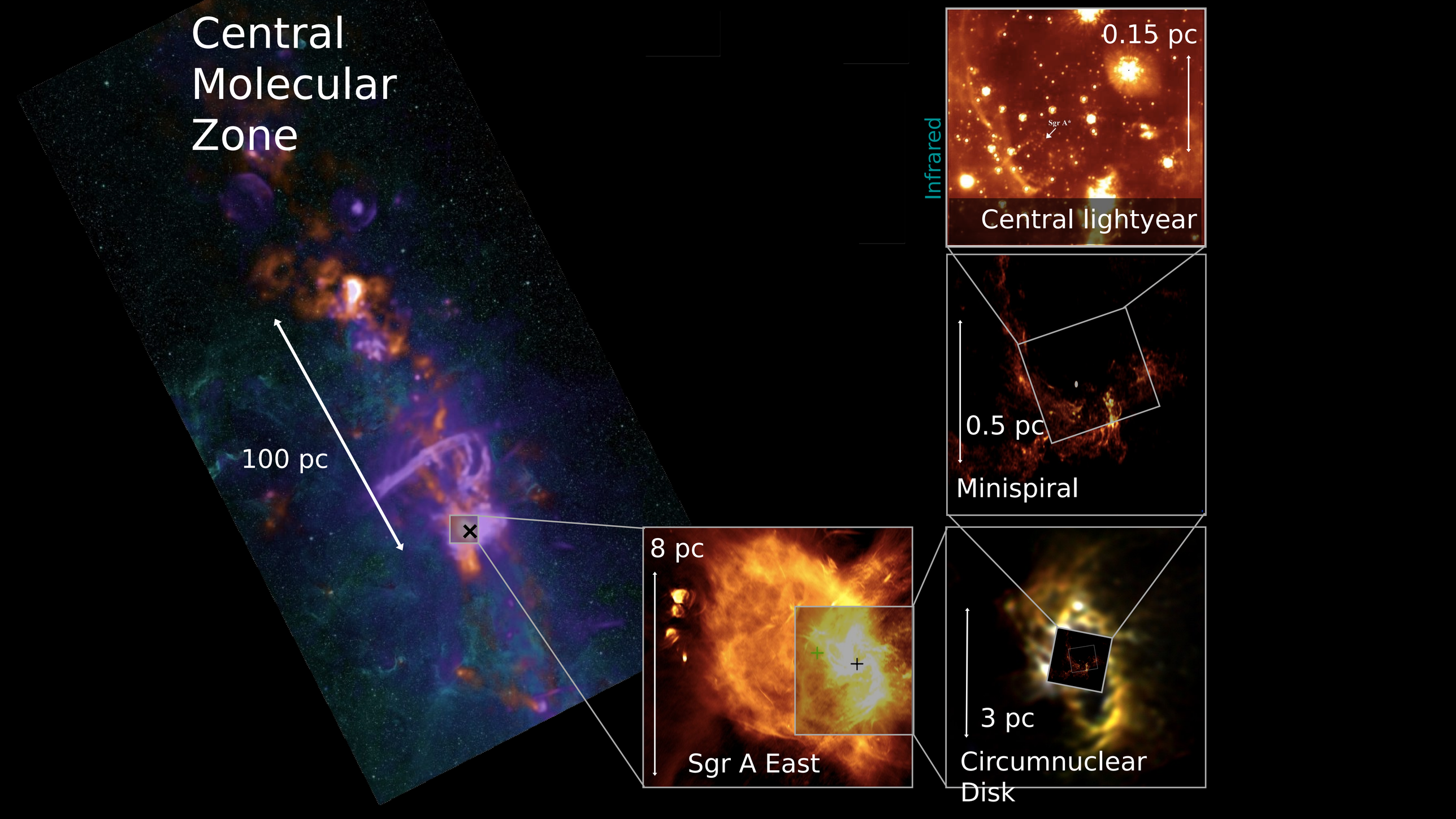
The yellow circle shows the region mapped.

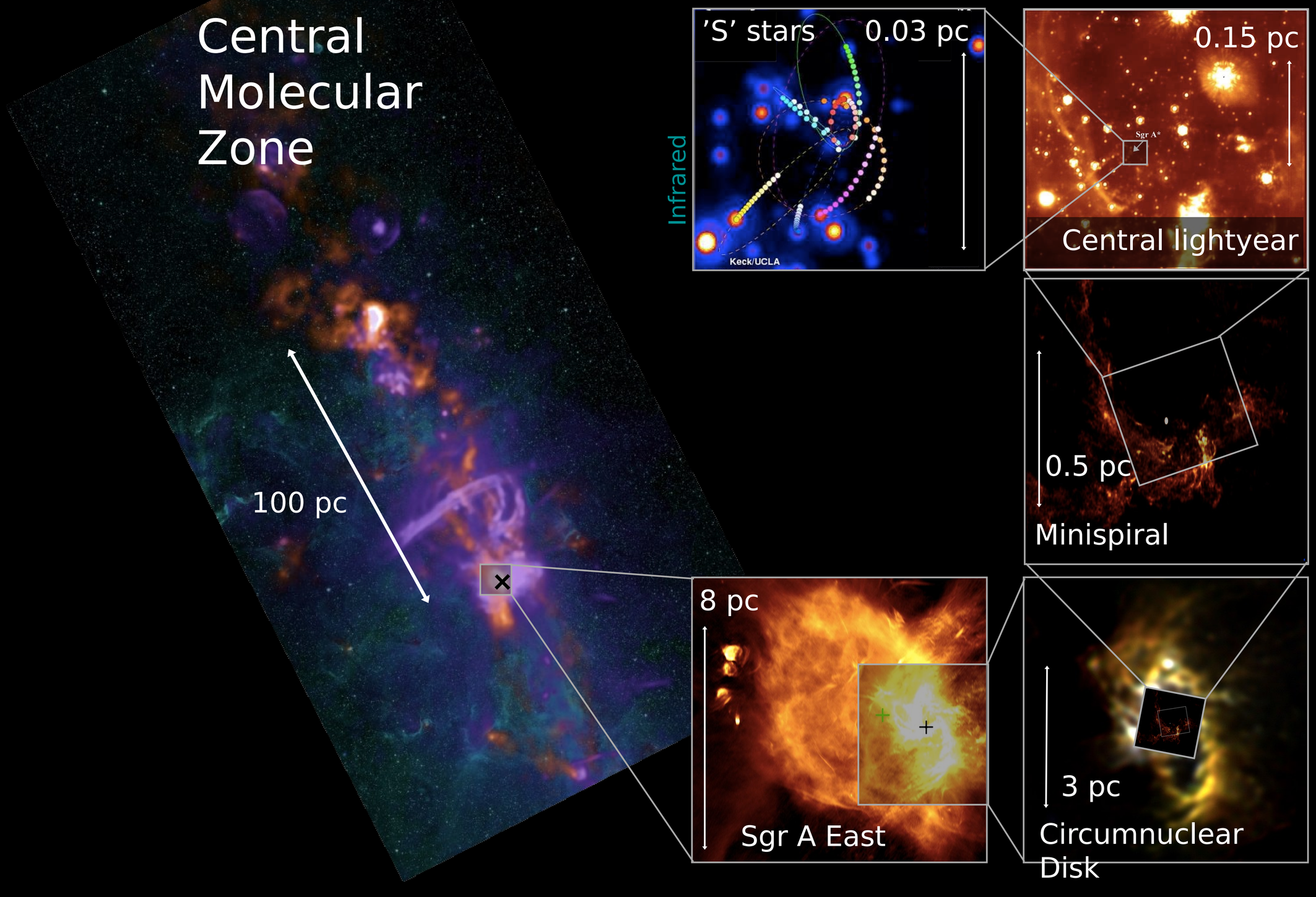

Central
Molecular
Zone
100 pc
Sgr A

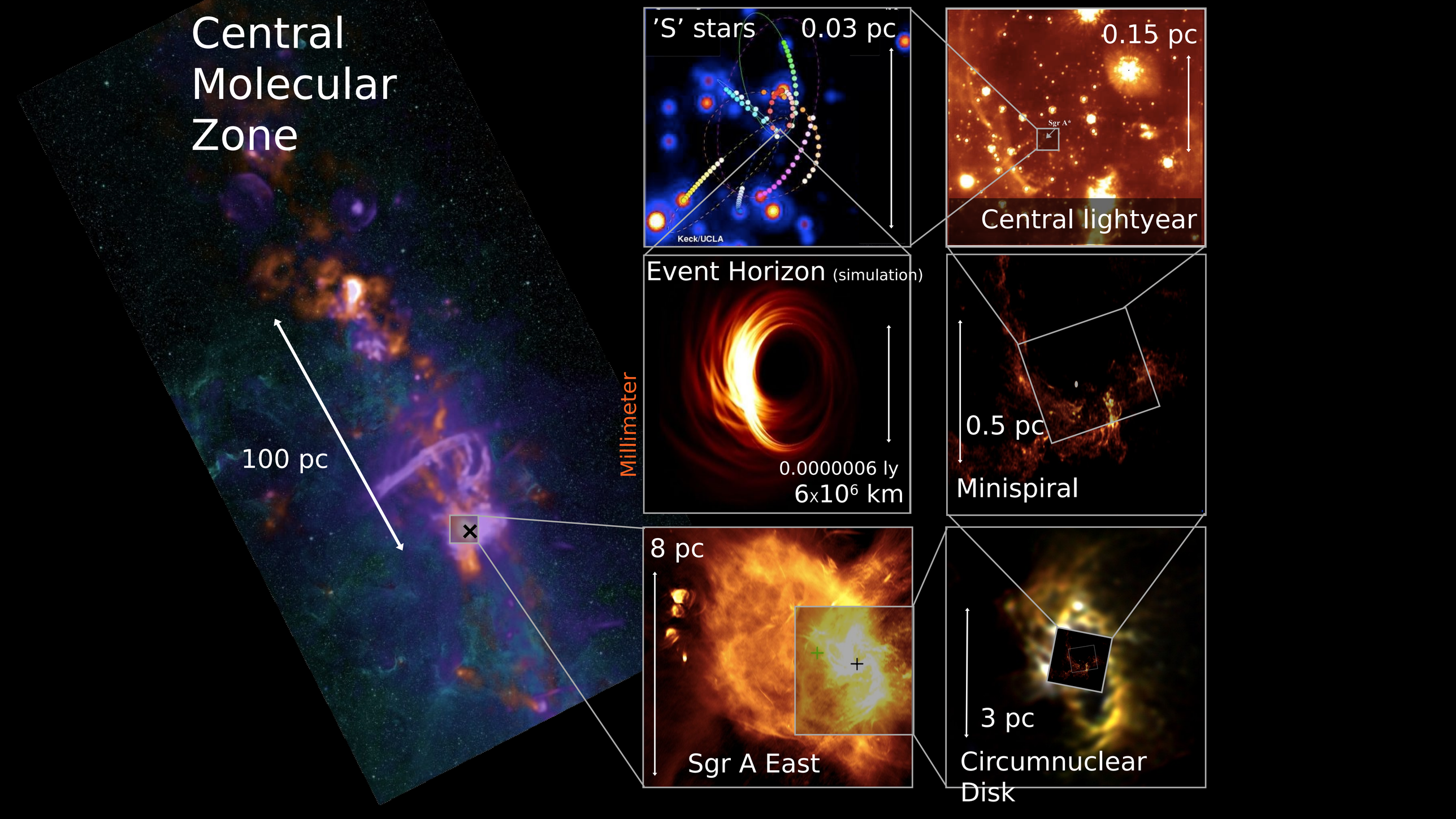
8 pc
Radio
Sgr A East


Central
Molecular
Zone
100 pc
8 pc
Sgr A East
Far-IR
3 pc
Circumnuclear
Disk

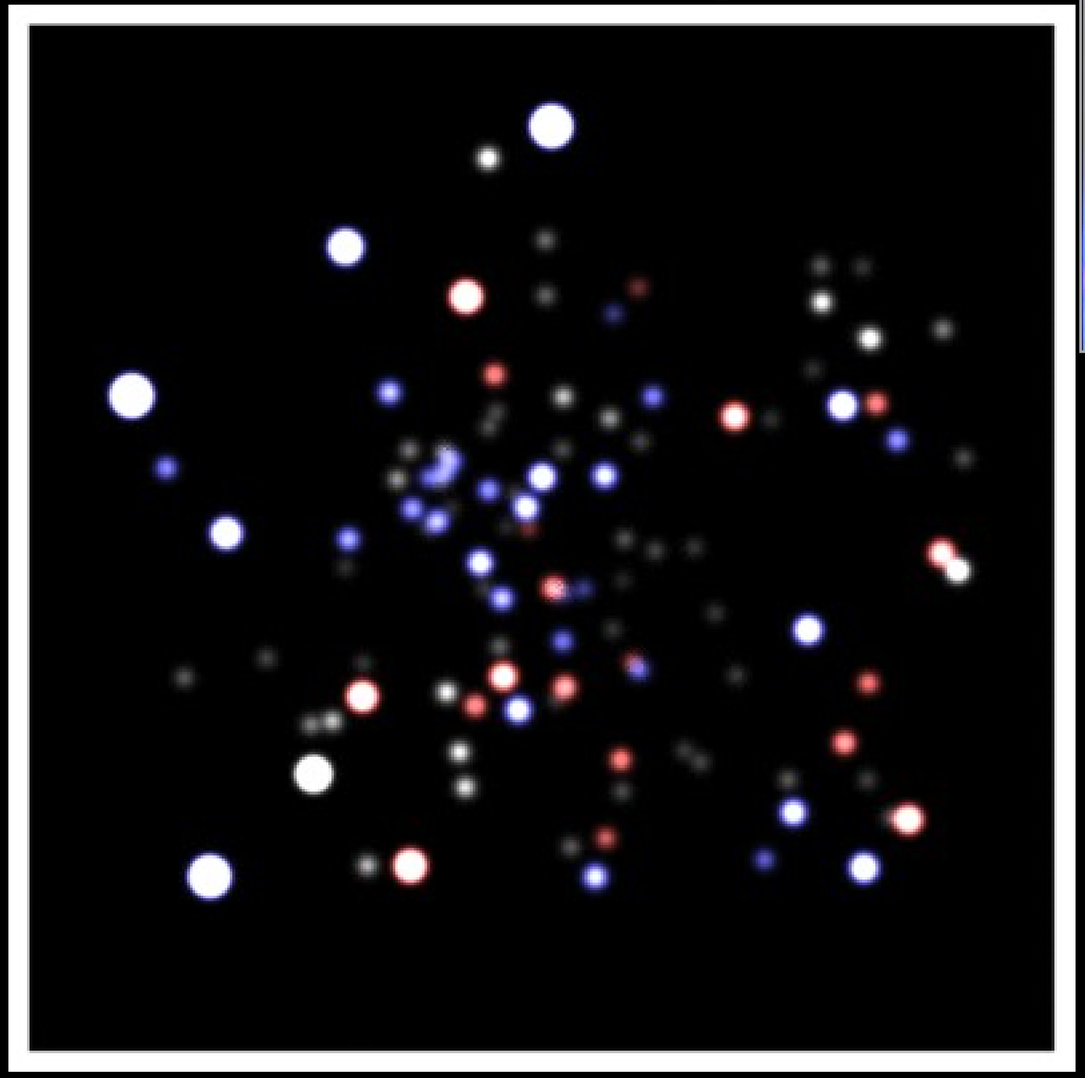

Central
Molecular
Zone
100 pc
8 pc
Sgr A East
Radio
0.5 pc
Minispiral
3 pc
Circumnuclear
Disk

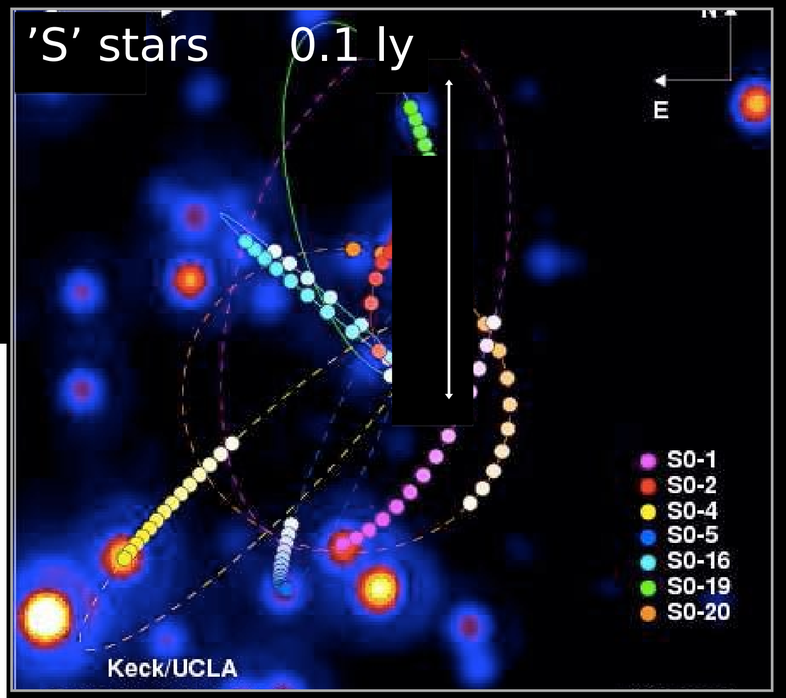

Central
Molecular
Zone
100 pc
8 pc
Sgr A East
Infrared
0.15 pc
Sgr A*
Central lightyear
0.5 pc
Minispiral
3 pc
Circumnuclear
Disk


Central
Molecular
Zone
100 pc
'S' stars
0.03 pc
Infrared
Keck/UCLA
0.15 pc
Sgr A*
Central lightyear
0.5 pc
Minispiral
8 pc
Sgr A East
3 pc
Circumnuclear
Disk


Central Molecular Zone
100 pc
'S' stars
0.03 pc
Keck/UCLA
0.15 pc
Sgr A*
Central lightyear
Event Horizon (simulation)
Millimeter
0.0000006 ly
6x10⁶ km
0.5 pc
Minispiral
8 pc
Sgr A East
3 pc
Circumnuclear Disk

2020 Nobel Prize in Physics





Andrea Ghez
The Nobel Prize in Physics 2020

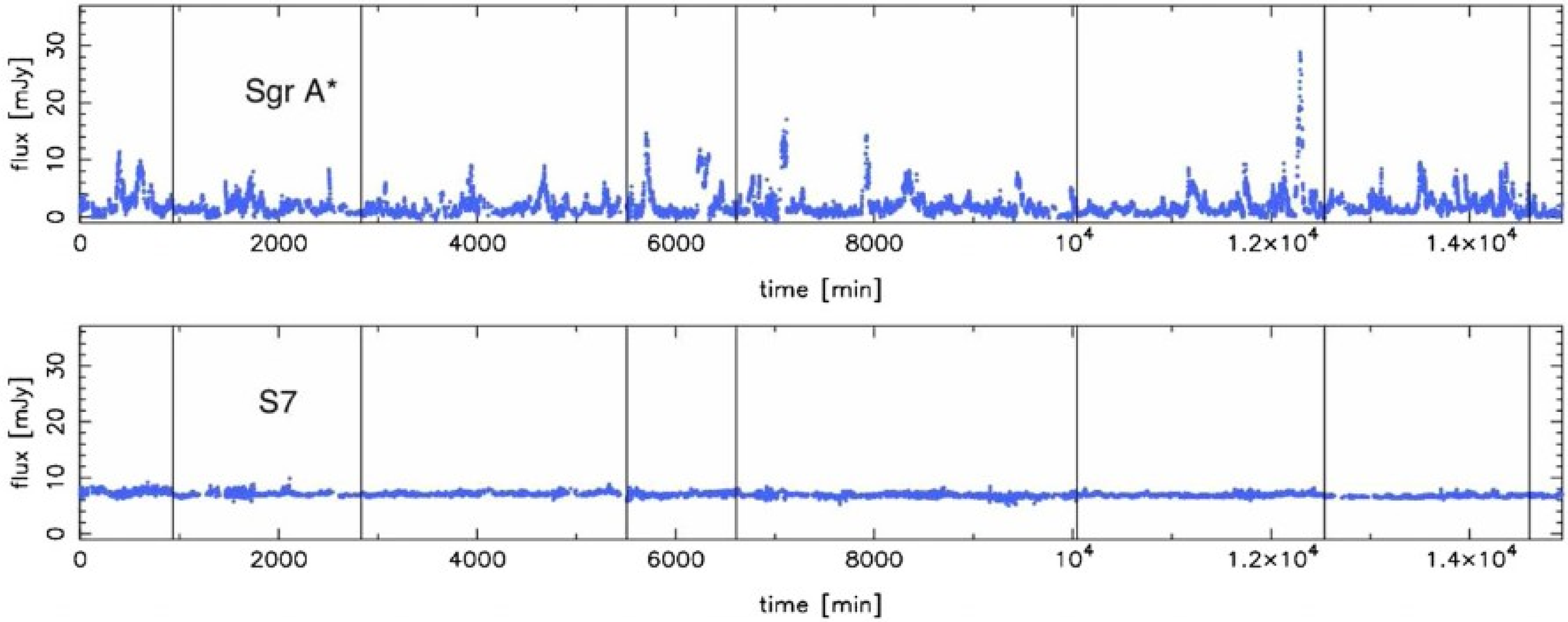
Born: 16 June 1965, New York, NY, USA

Affiliation at the time of the award: University of California, Los Angeles, CA, USA

Prize motivation: "for the discovery of a supermassive compact object at the centre of our galaxy."

Prize share: 1/4

Infrared Flux (Brightness) Variations of Sgr A*:



Witzel et al. (2012)

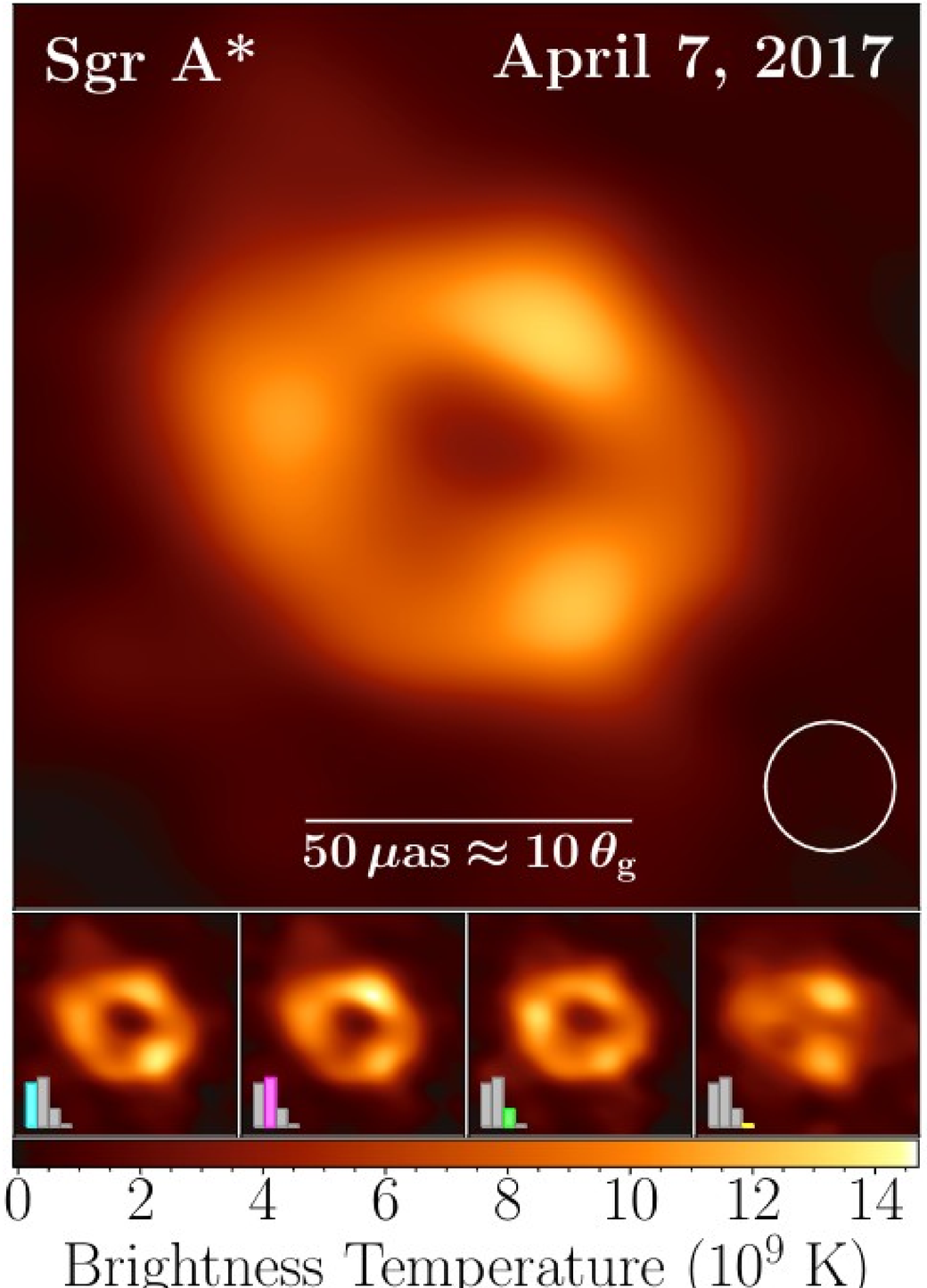
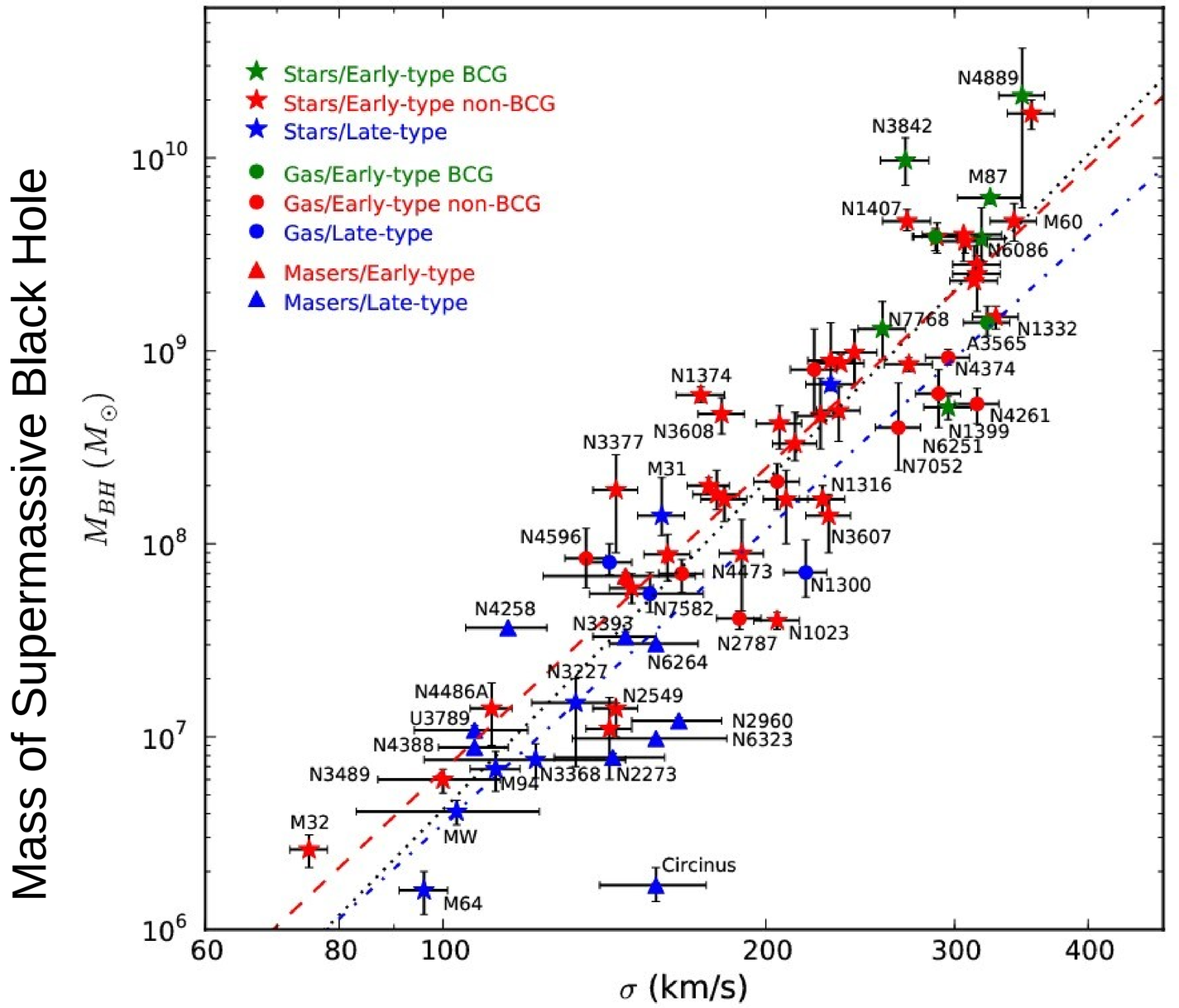


Figure 3. Representative EHT image of Sgr A* from observations on 2017 April 7. This image is an average over different reconstruction methodologies (CLEAN, RML, and Bayesian) and reconstructed morphologies. Color denotes the specific intensity, shown in units of brightness temperature. The inset circle shows the restoring beam used for CLEAN image reconstructions (20 μas FWHM). The bottom panels show average images within subsets with similar morphologies, with their prevalence indicated by the inset bars. The multiplicity of image modes reflects uncertainty due to the sparse baseline coverage; it does not correspond to different snapshots of the variable source. Nearly all reconstructed images show a prominent ring morphology. While the diameter and thickness of the ring are generally consistent across the reconstructions, the azimuthal structure of the ring is poorly constrained.

EHT Collaboration, 2022

“M-sigma” Relation



Mass of Supermassive Black Hole

Spread in Bulge Star’s Velocities

http://www.thespectrumofriemannium.com/2017/08/13/log199-m-sigma/