

The Atacama Cosmology Telescope

From Maps to parameters

Thibaut Louis

[Dunkley, Calabrese et al. 2013, arXiv:1301.0776v1](#)

[Das, Louis et al, arXiv:1301.1037v1](#)

[Sievers et al. 2013, arXiv:1301.0824](#)

Atacama Cosmology Telescope



5200 meter elevation, one of driest places on planet
1° field of view, 6-meter dish, arcminute resolution
2 frequencies: 150-220 GHz, 3000 detectors



Atacama Cosmology Telescope

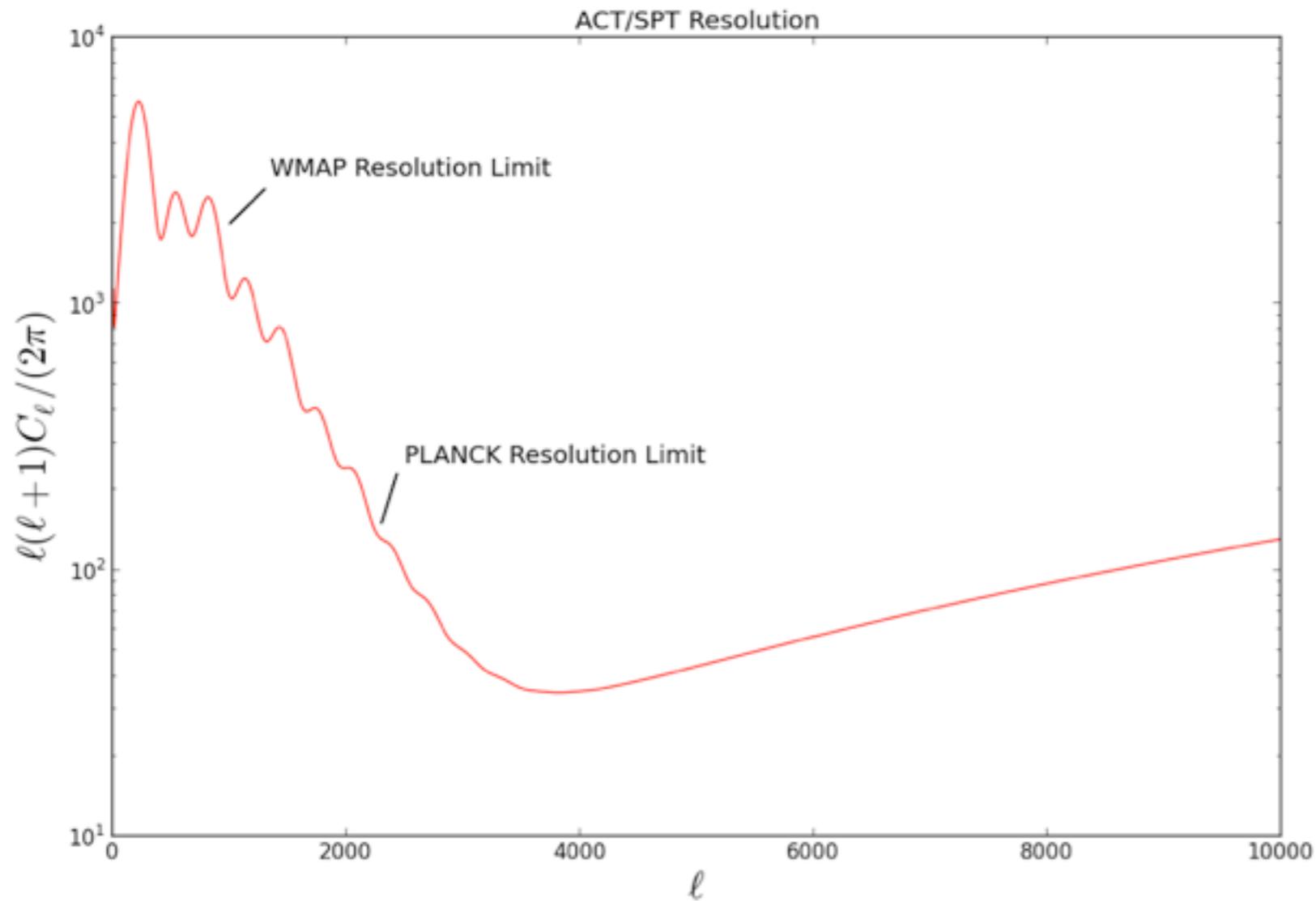
- Univ of British Columbia (Canada)
- Univ of Cape Town (S Africa)
- Cardiff University (UK)
- Columbia University (USA)
- Haverford College (USA)
- INAOE (Mexico)
- Univ of Kwa-Zulu Natal (S Africa)
- Univ of Massachusetts (USA)
- NASA/GSFC (USA)
- NIST (USA)
- Univ of Oxford (UK: Dunkley, Addison, Hlozek, Louis, Calabrese)
- Univ of Pennsylvania (USA)
- **Princeton University (USA) (PI L. Page)*
- Univ of Pittsburgh (USA)
- Pontifica Universidad Catolica (Chile)
- Rutgers University (USA)
- Univ of Toronto (Canada)
- +Rome La Sapienza, Miami, Berkeley (Das), Chicago, MPA, Stanford

→ ~ 90 collaborators

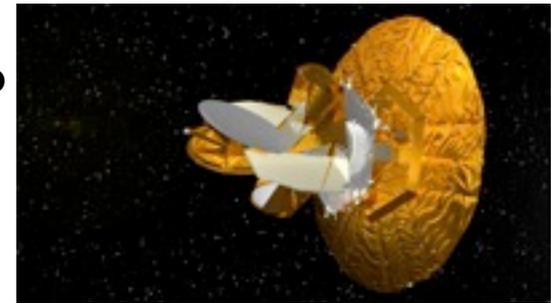


ACT Resolution

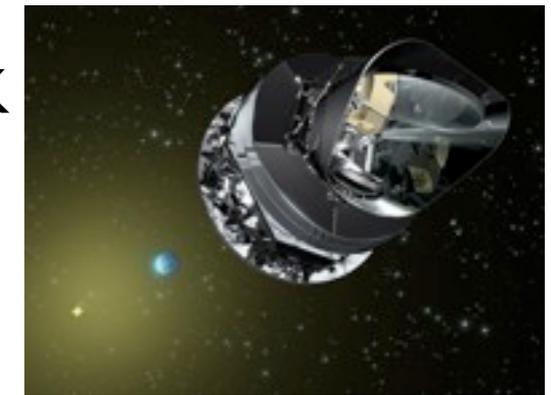
Towards the end of a 10 years adventure in CMB Physics



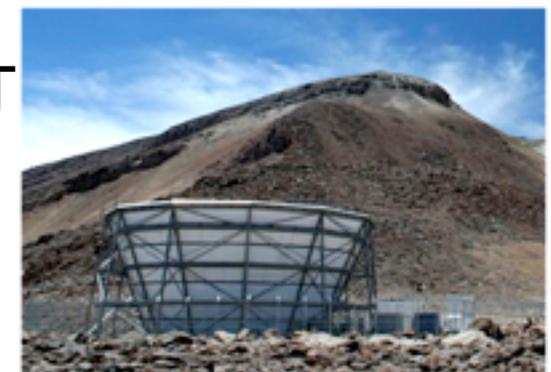
WMAP



PLANCK



ACT

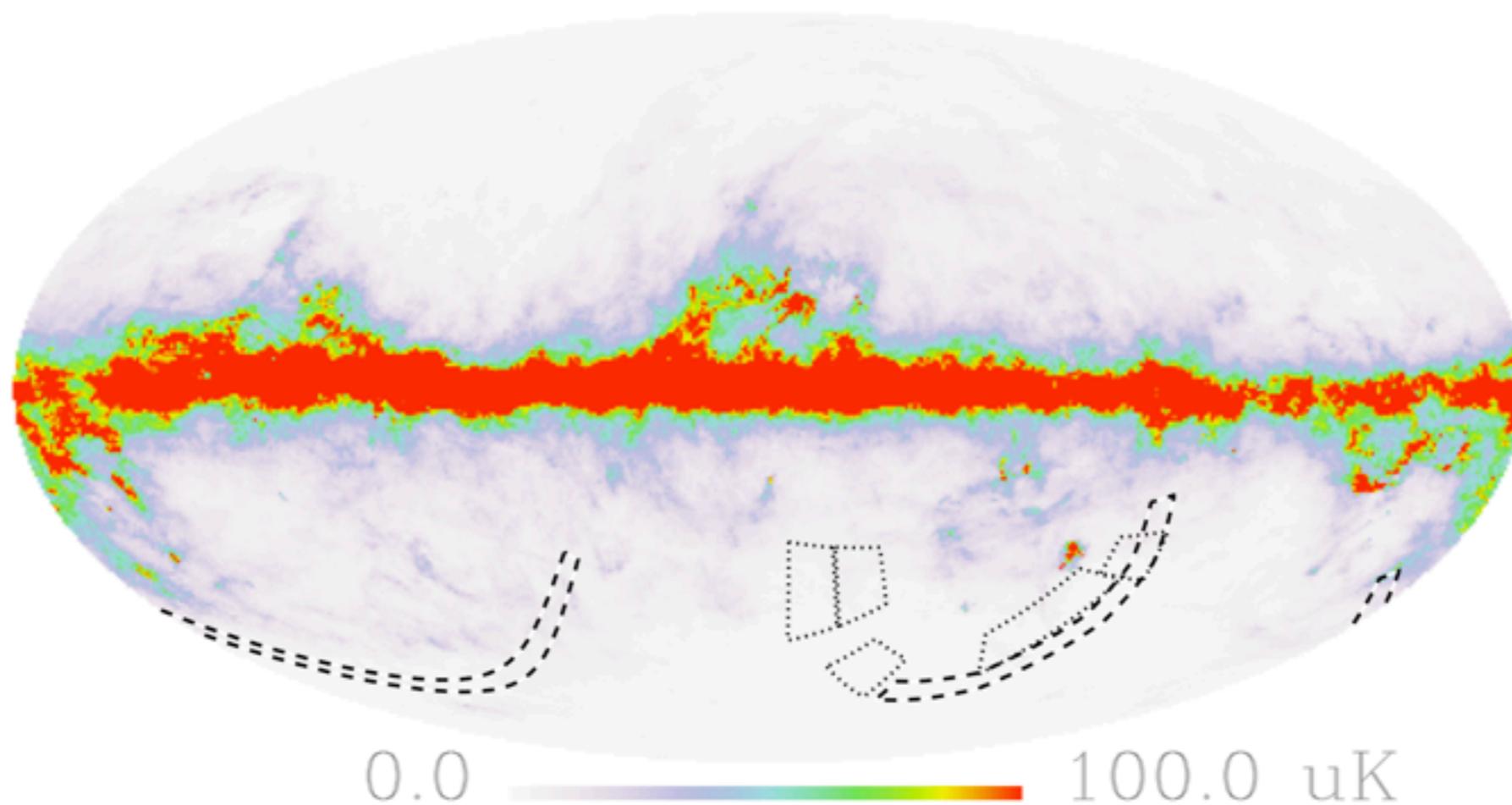


SPT



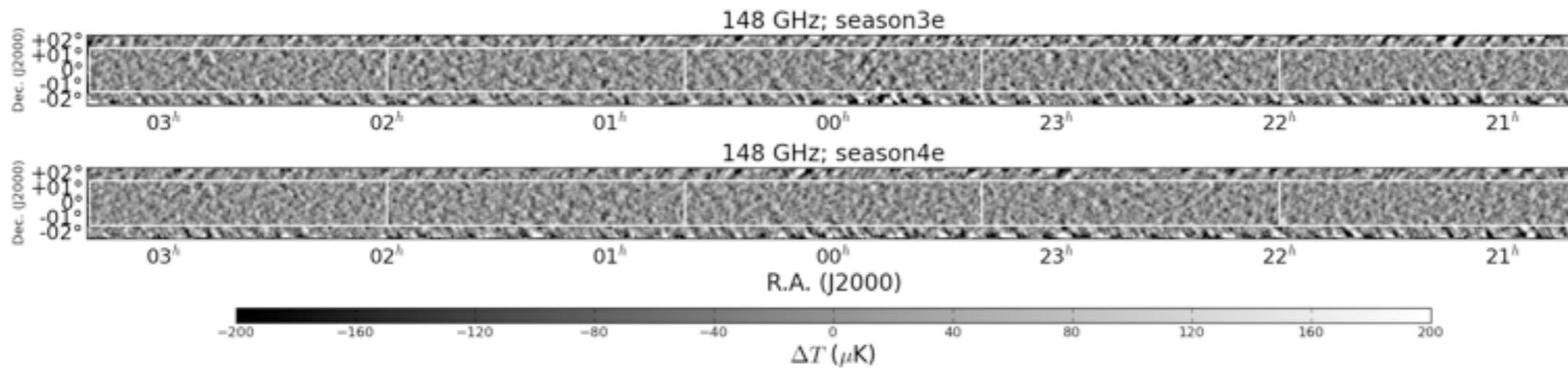
ACT Observations I:

600 square degrees distributed into two different regions of the sky: Equatorial and South

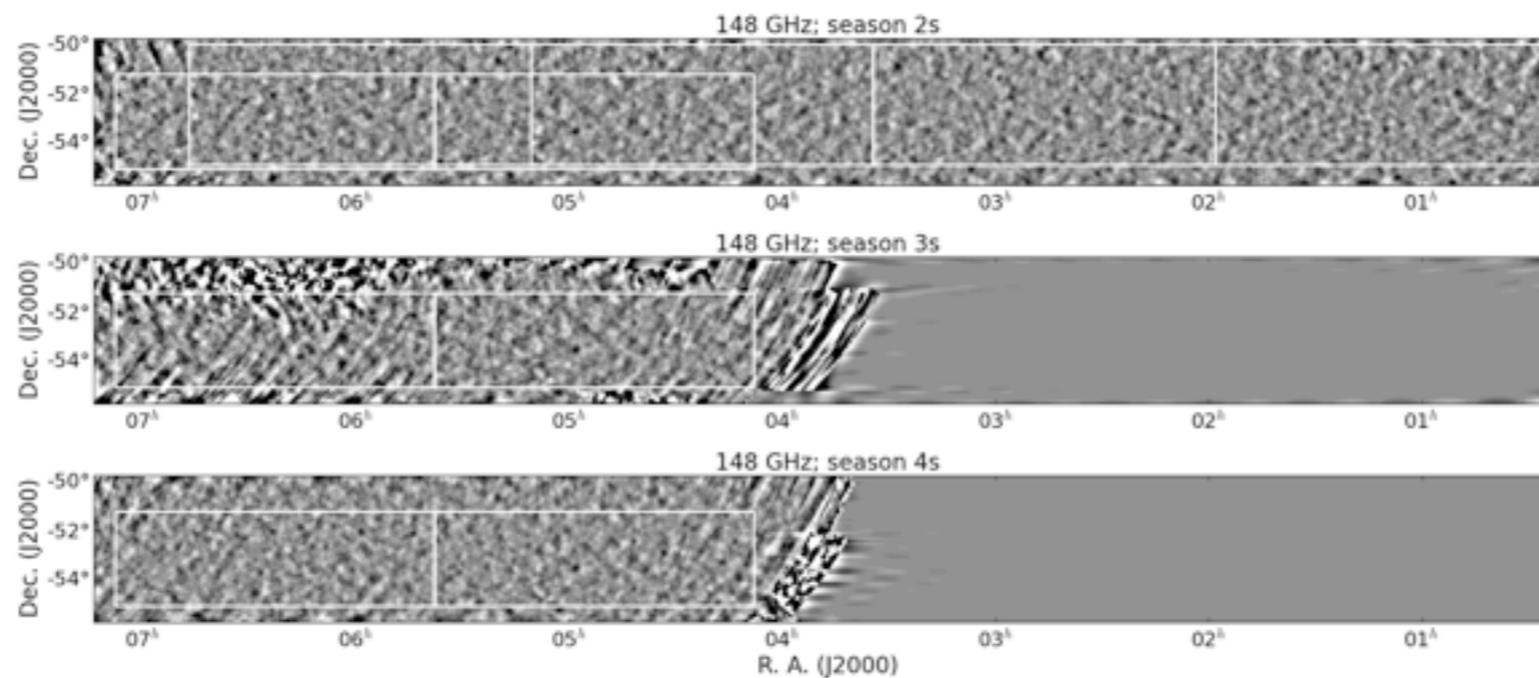


ACT Observations II:

2 years of data for equatorial's map:

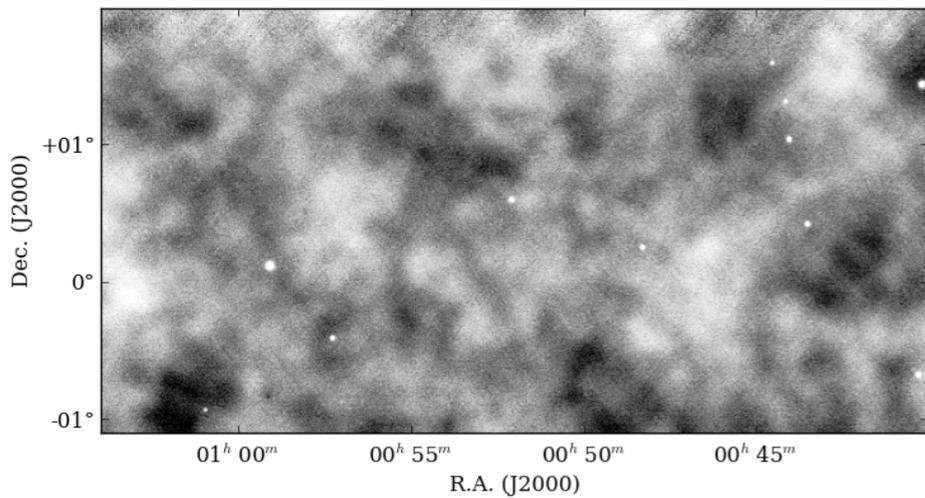
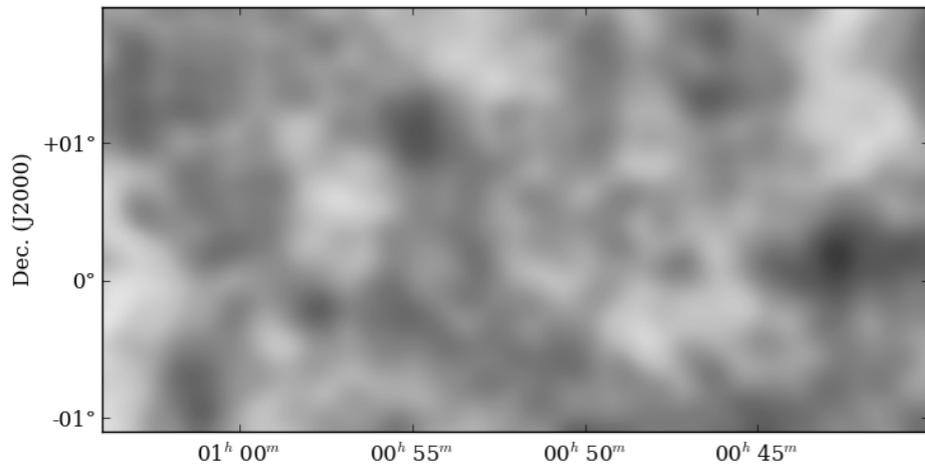


3 years of data for southern map:



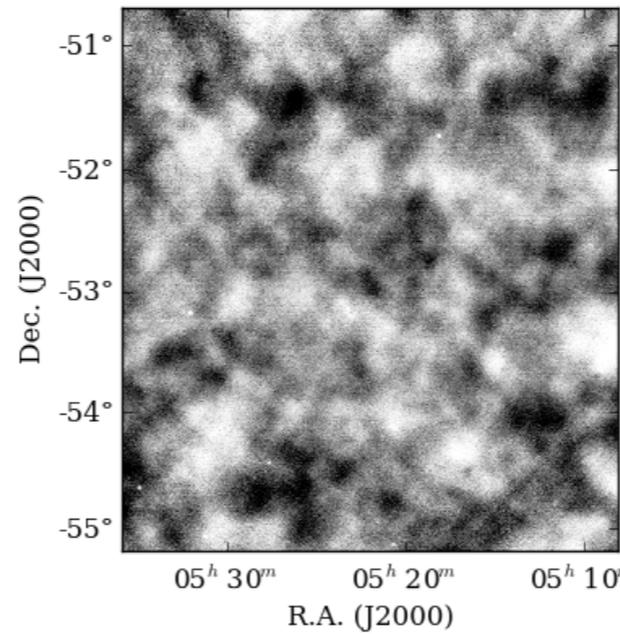
Comparison with SPT and WMAP

WMAP

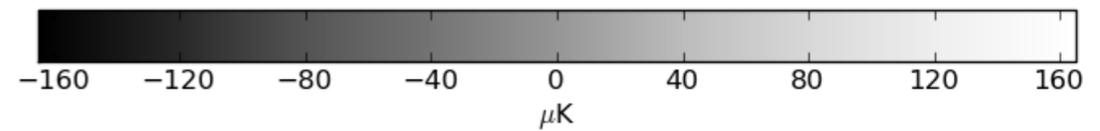
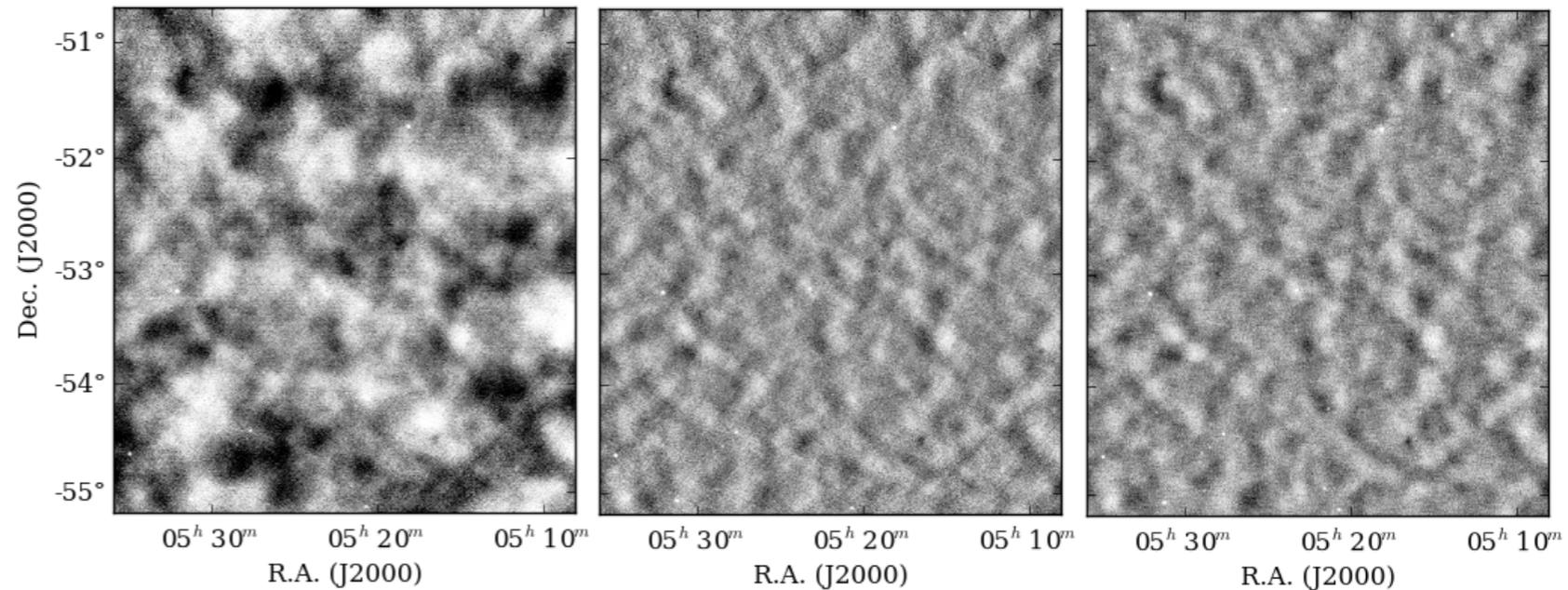


ACT

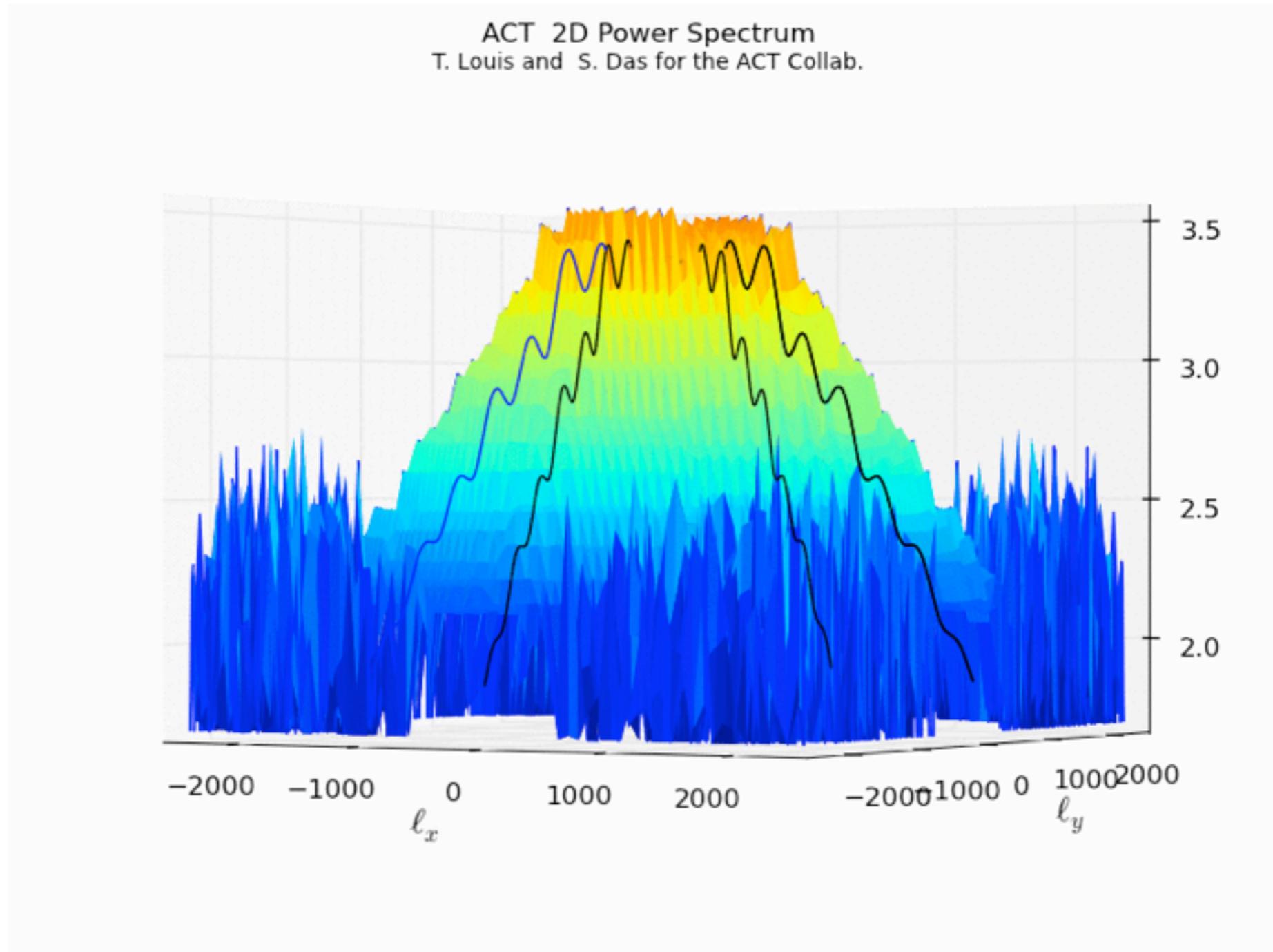
ACT



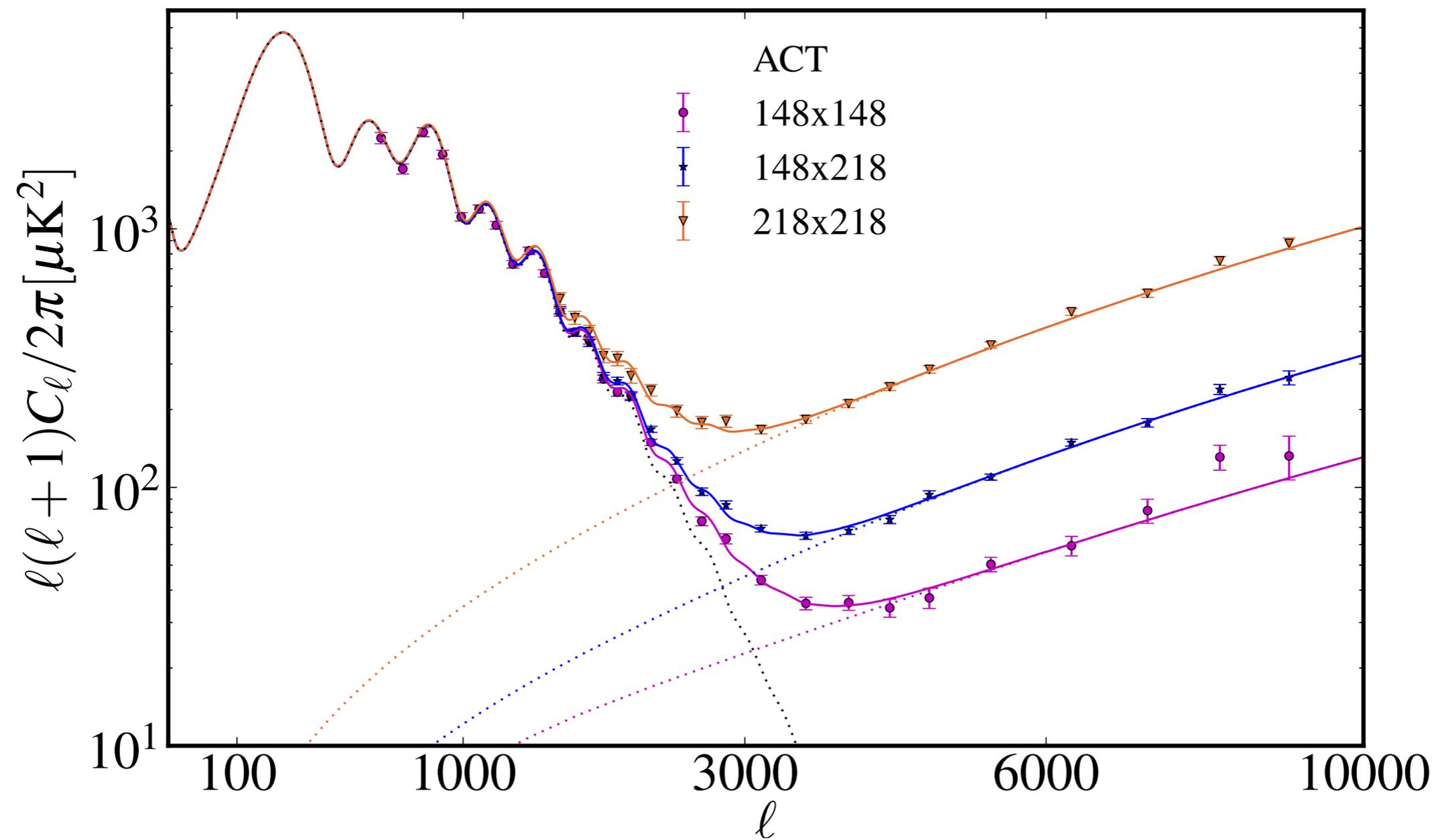
SPT



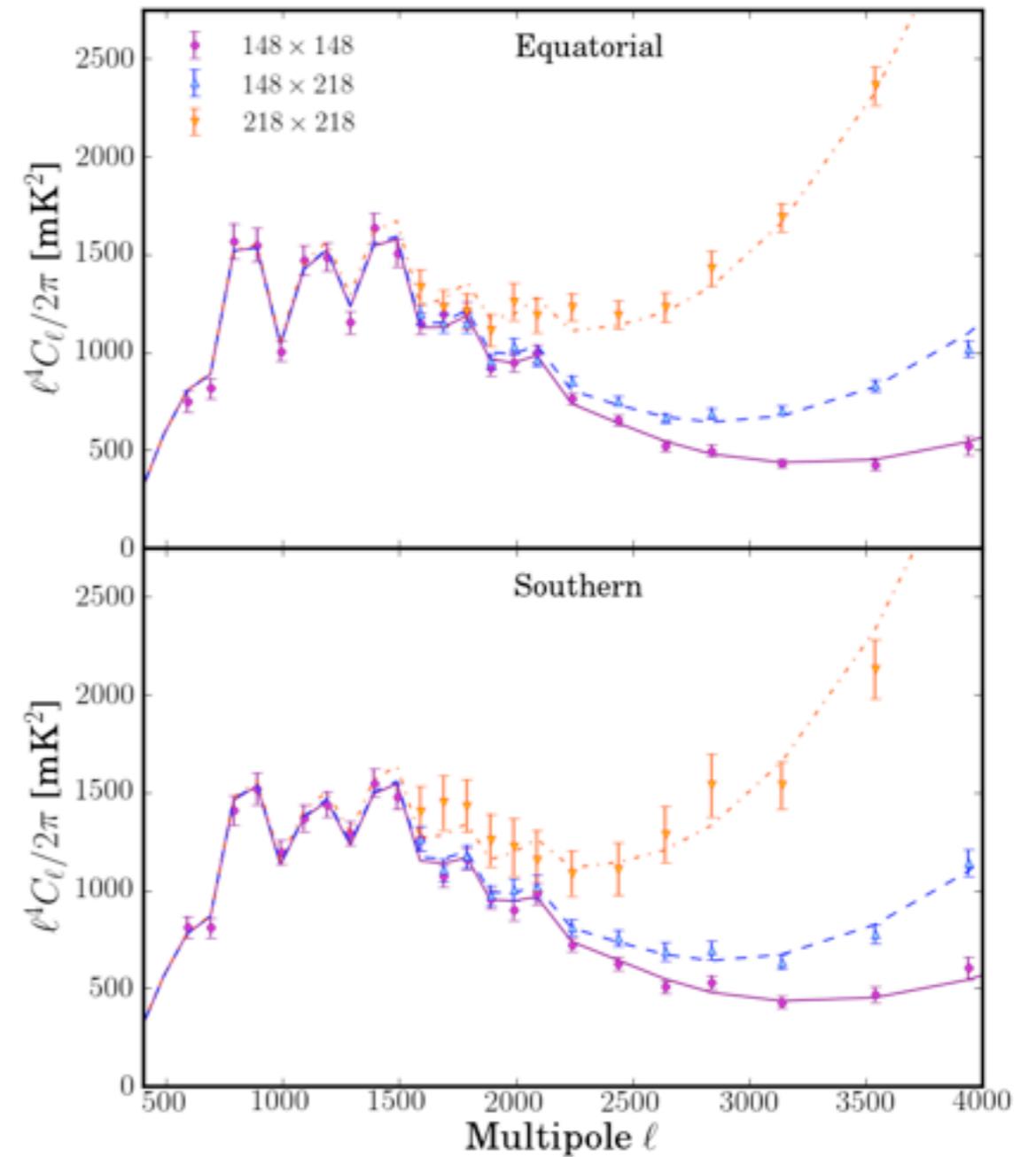
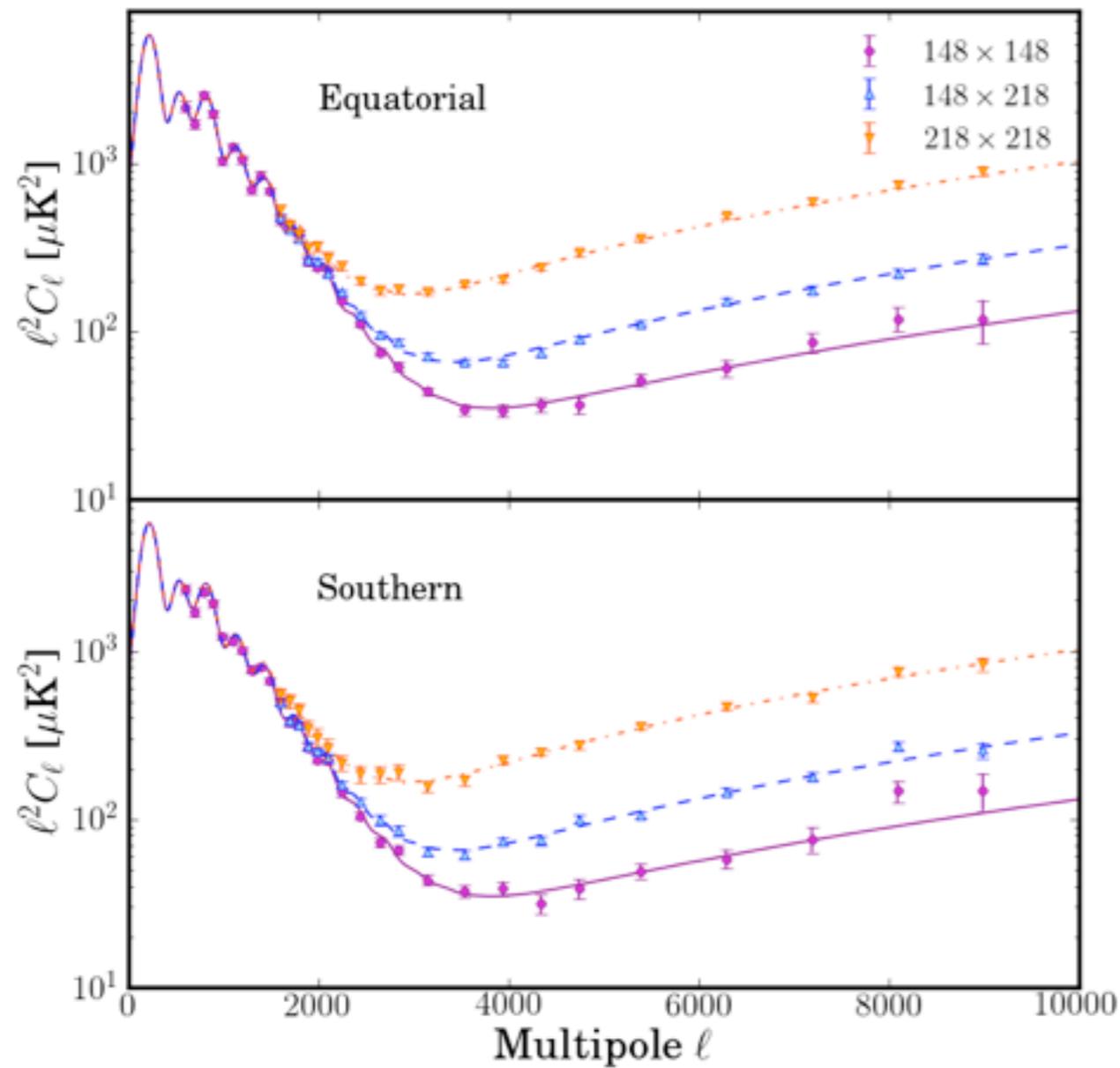
2D Power Spectrum

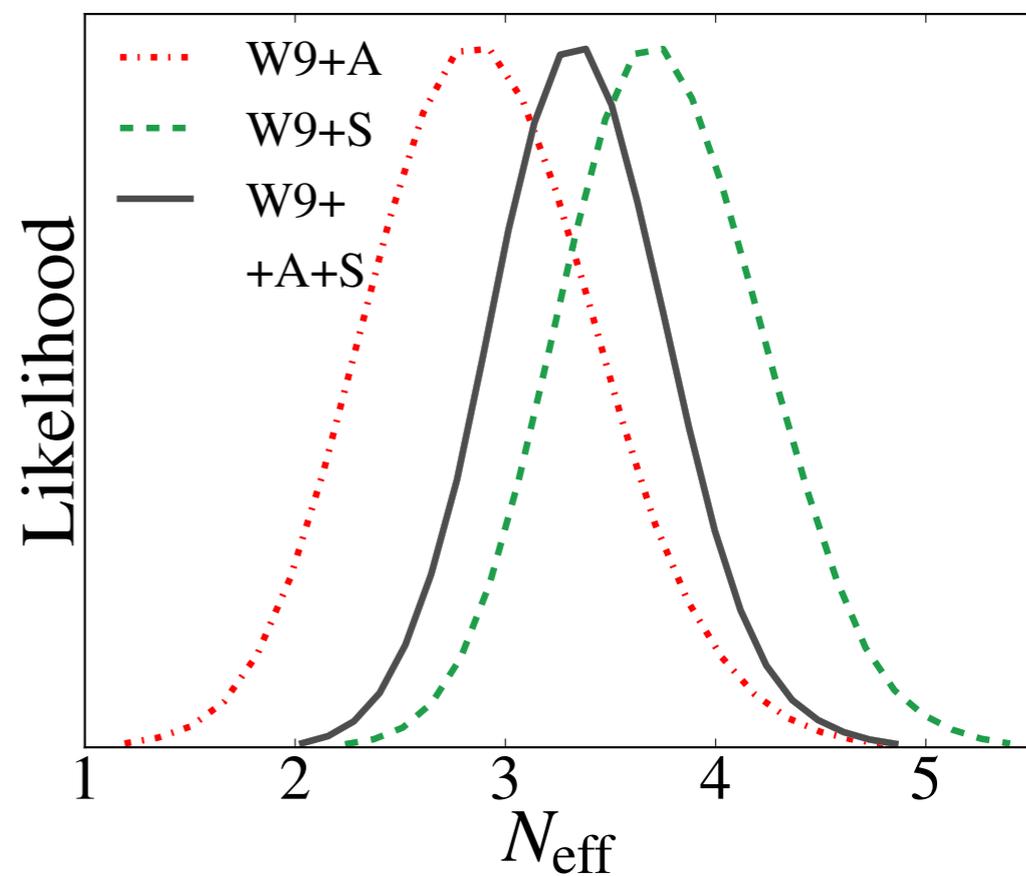
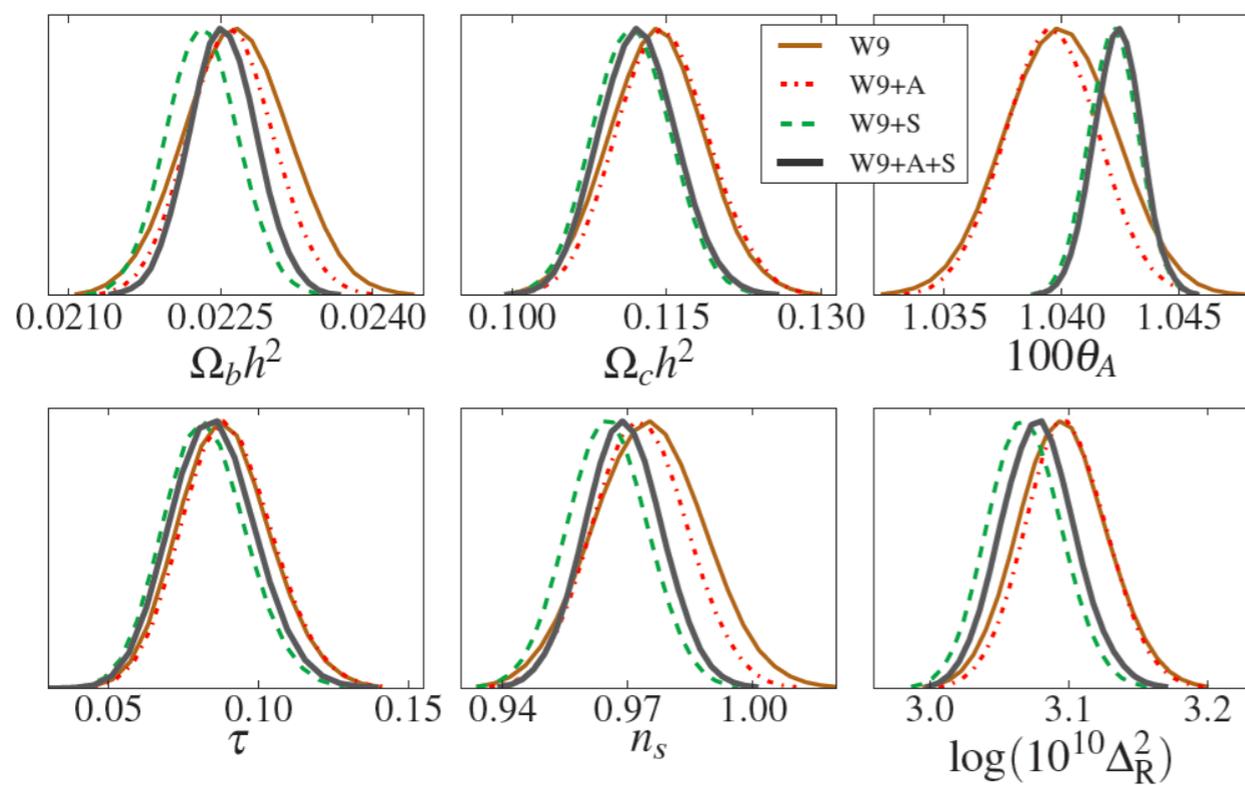
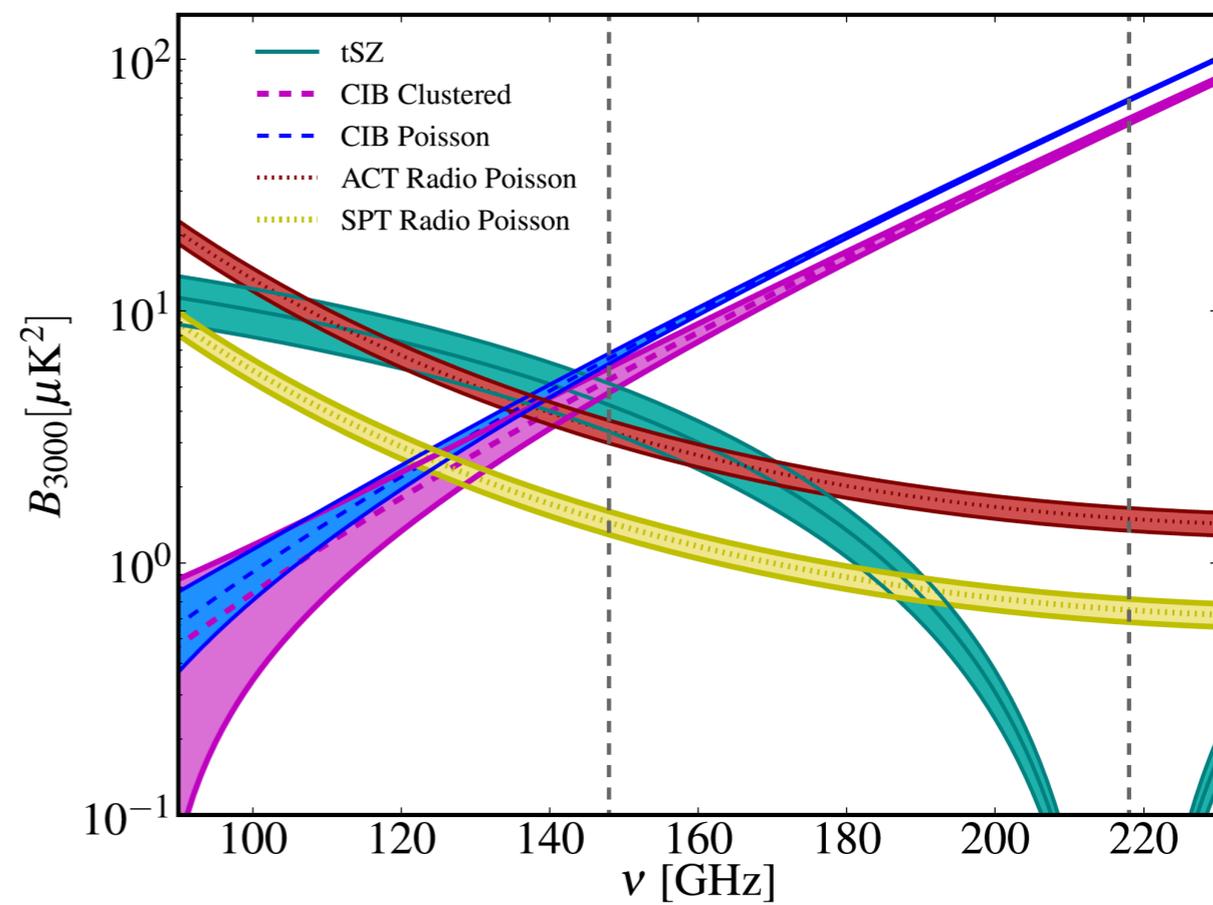
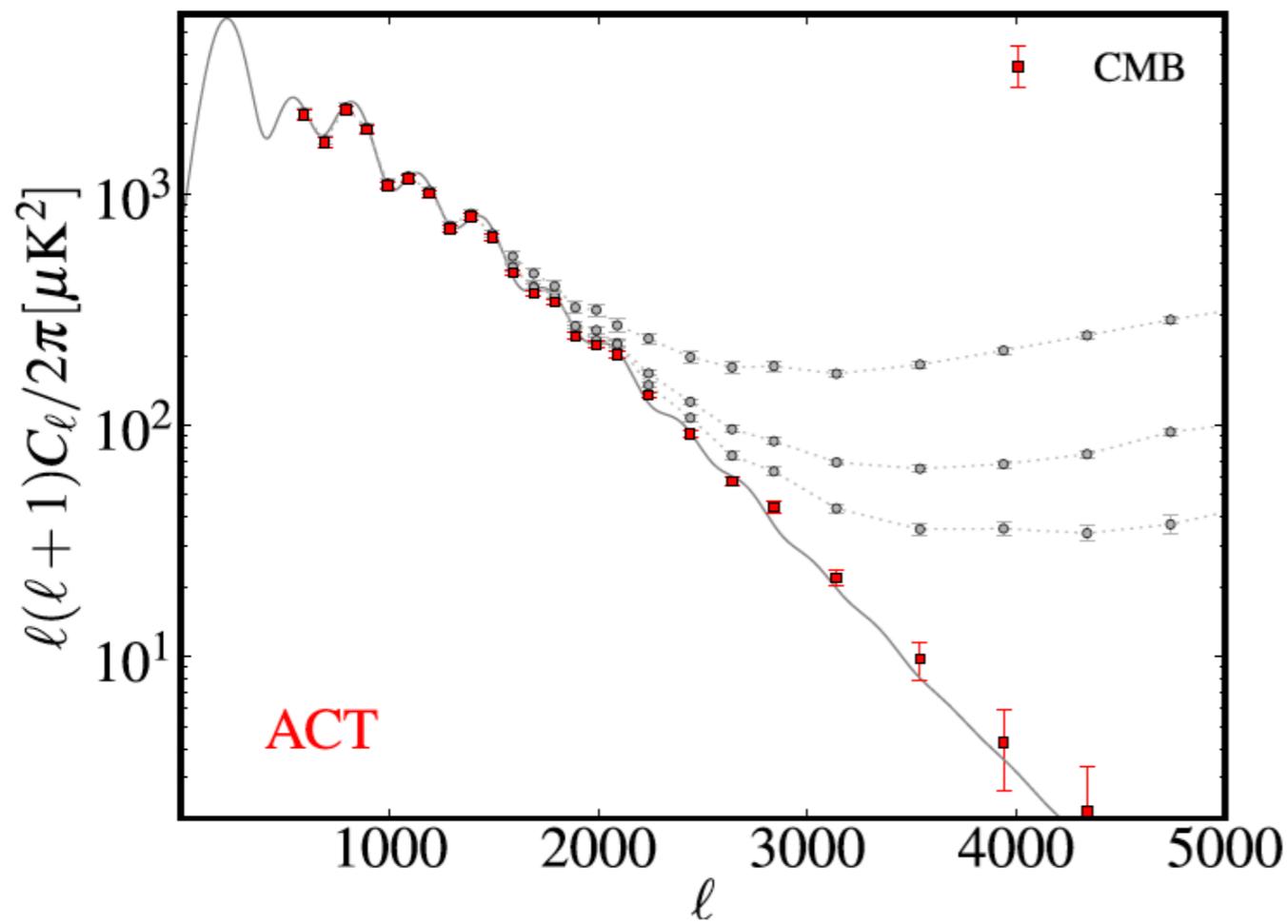


Act Power Spectra

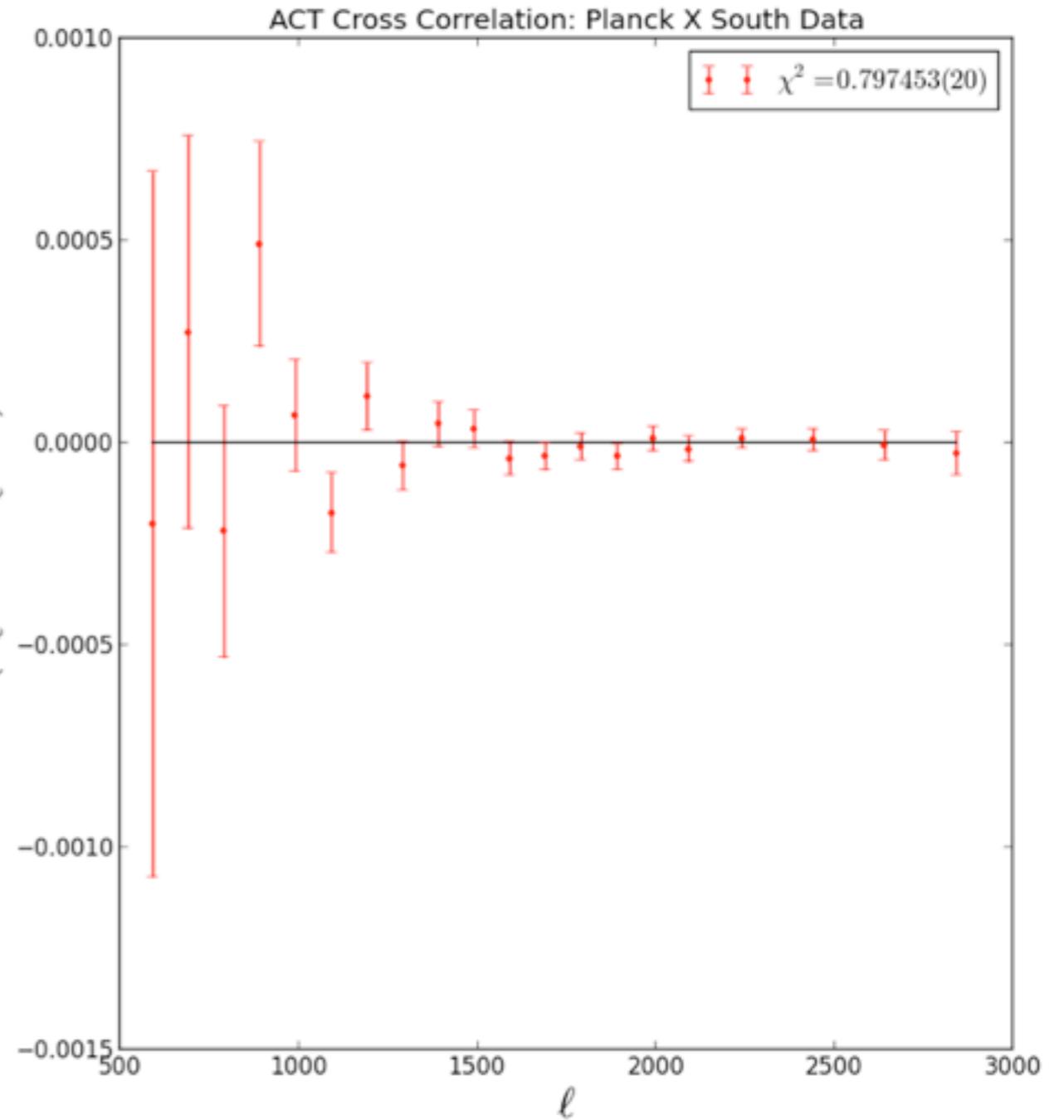
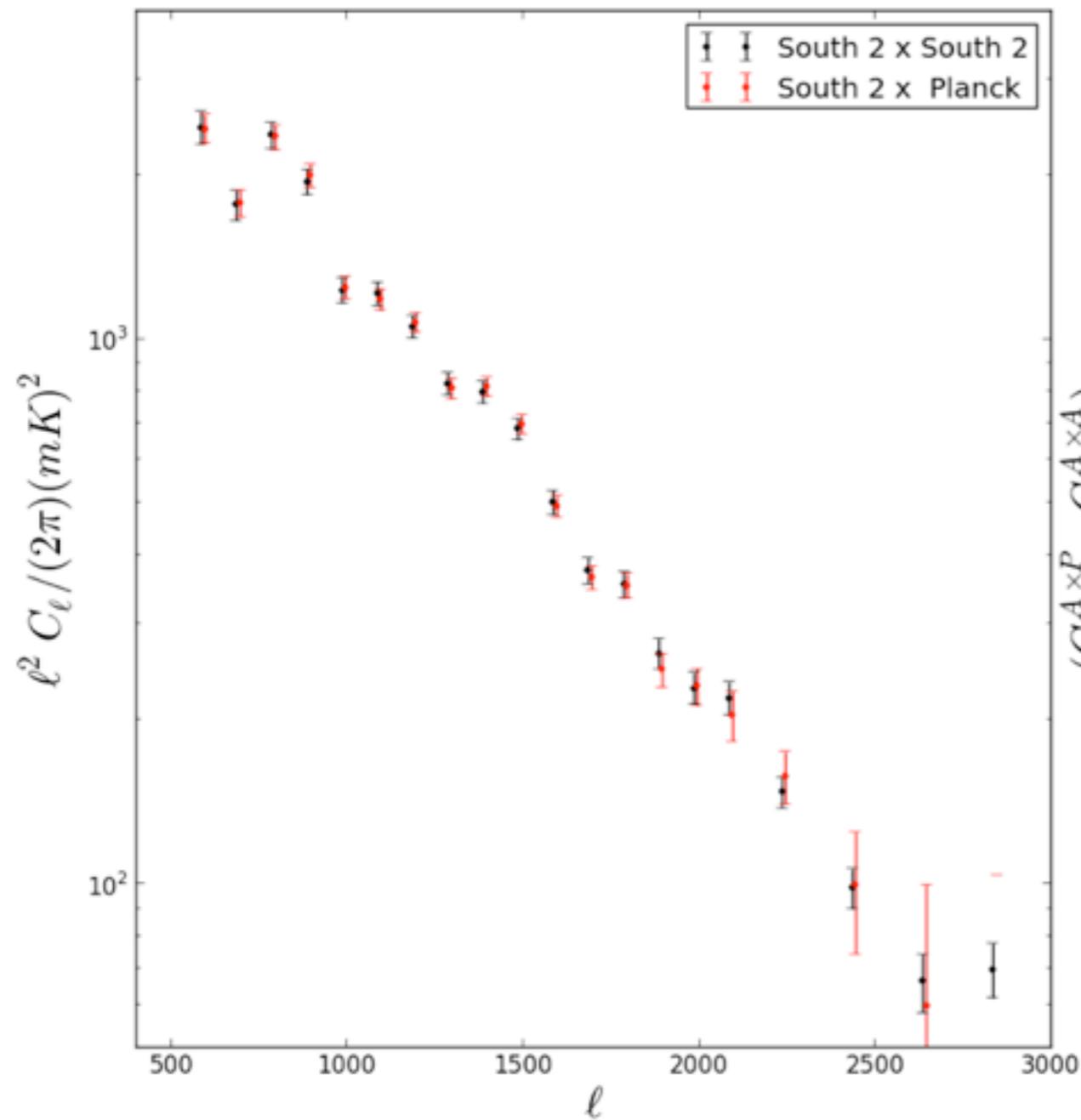


Act Power Spectra

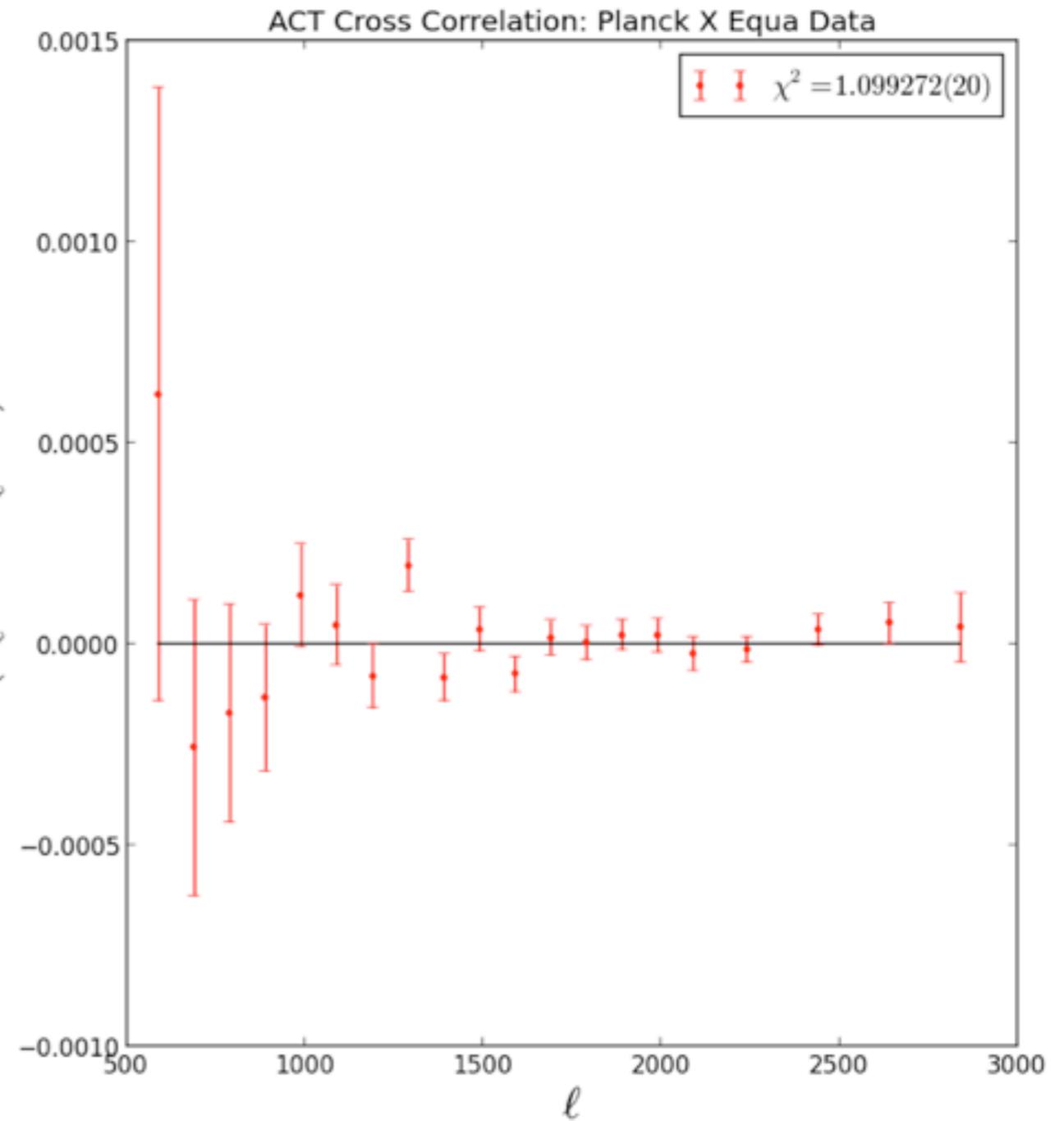
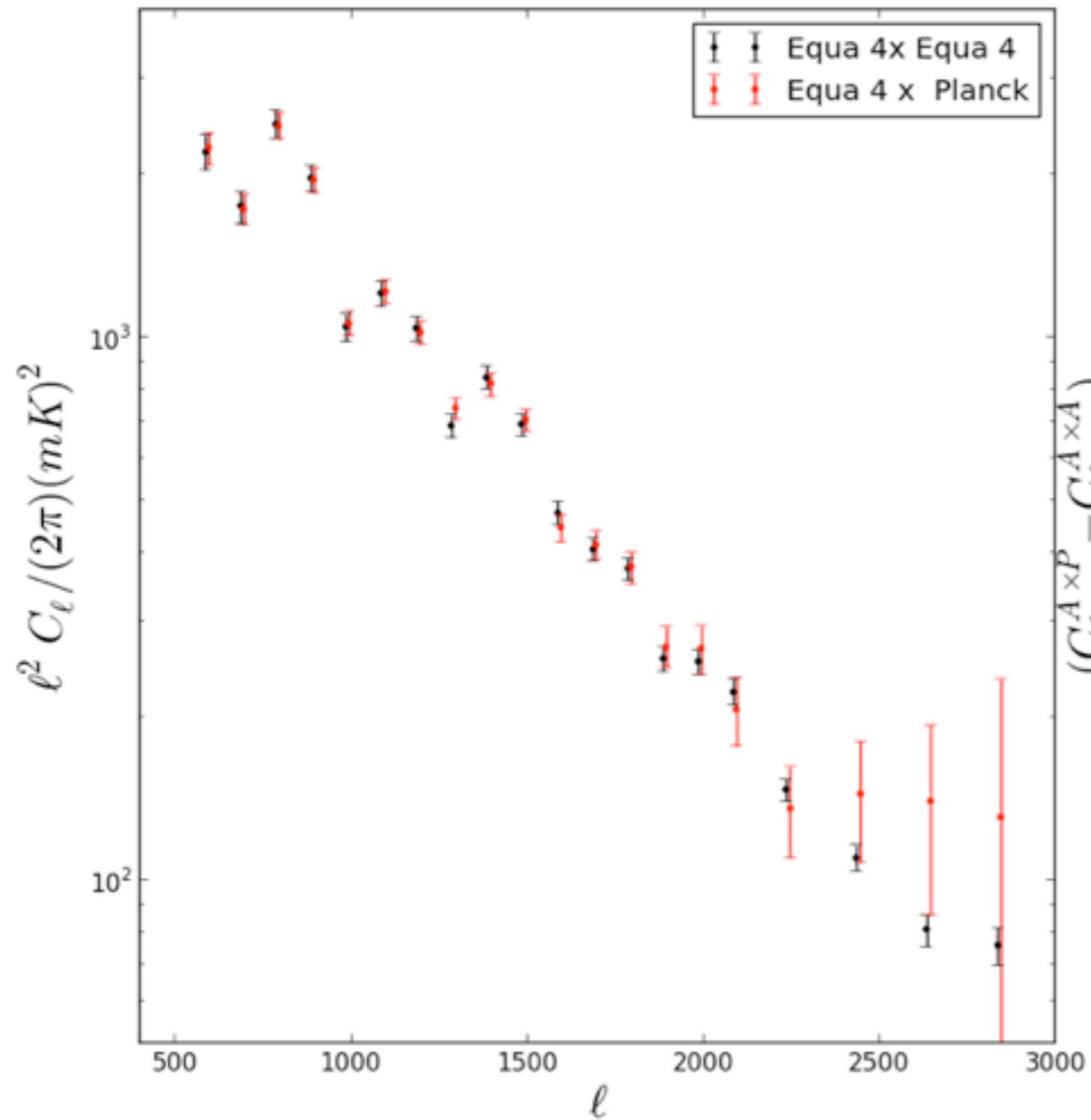




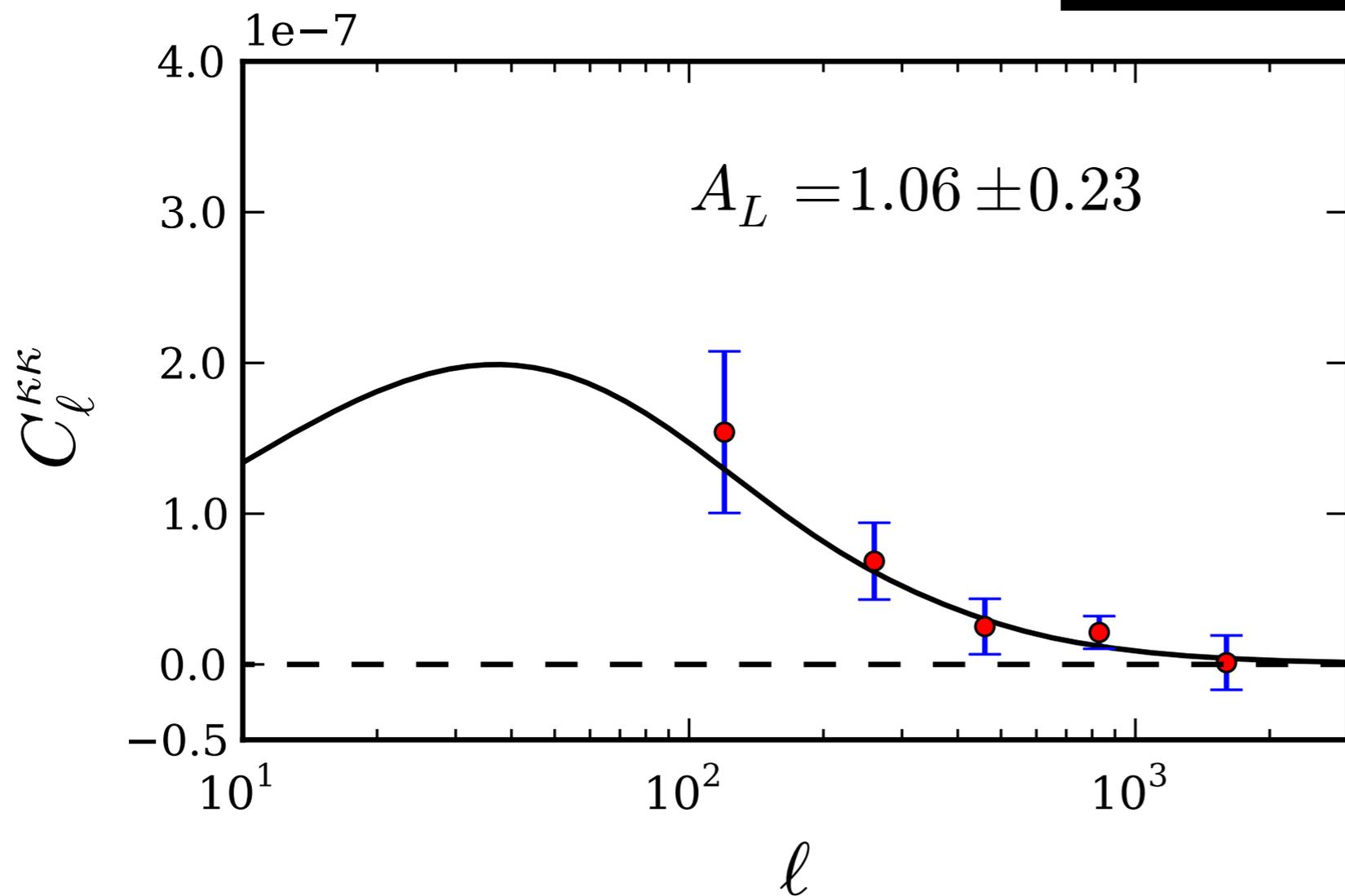
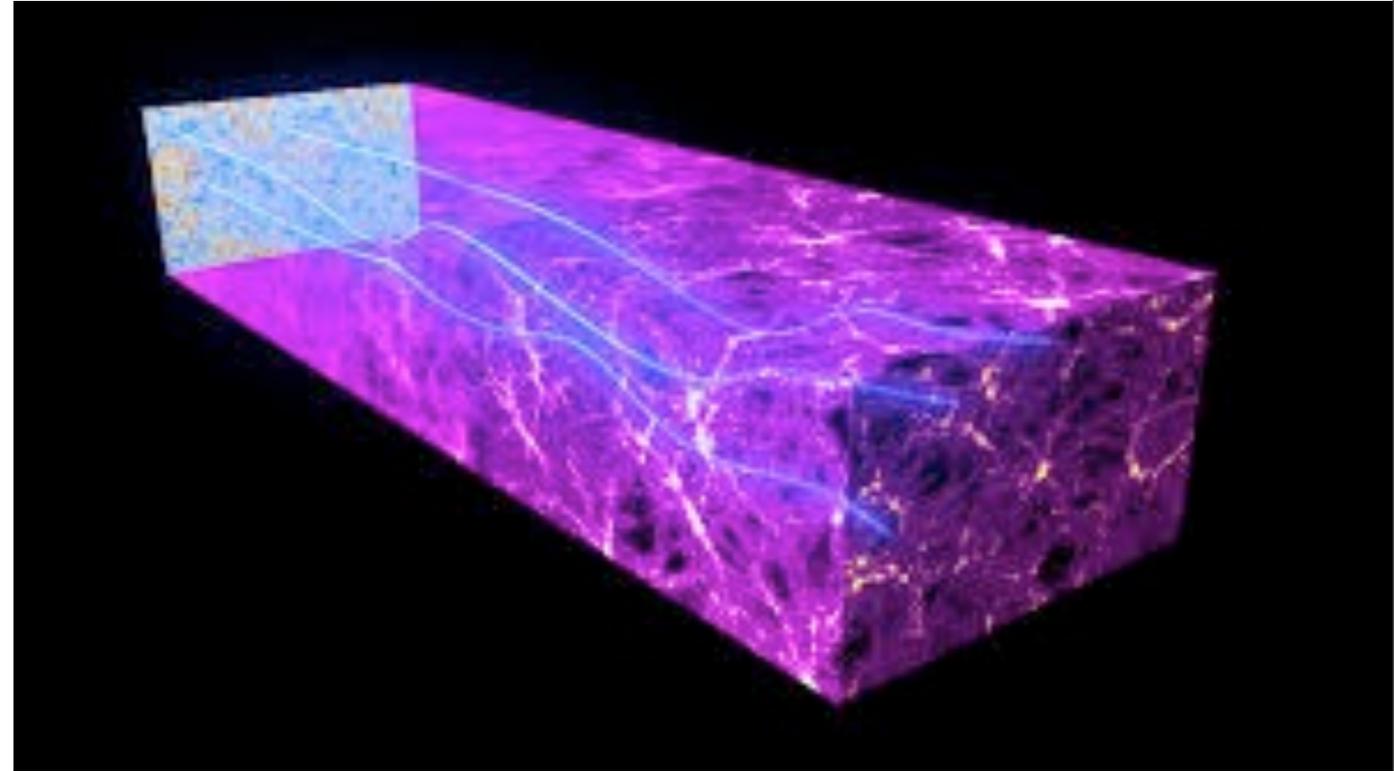
ACT VS PLANCK (Preliminary)



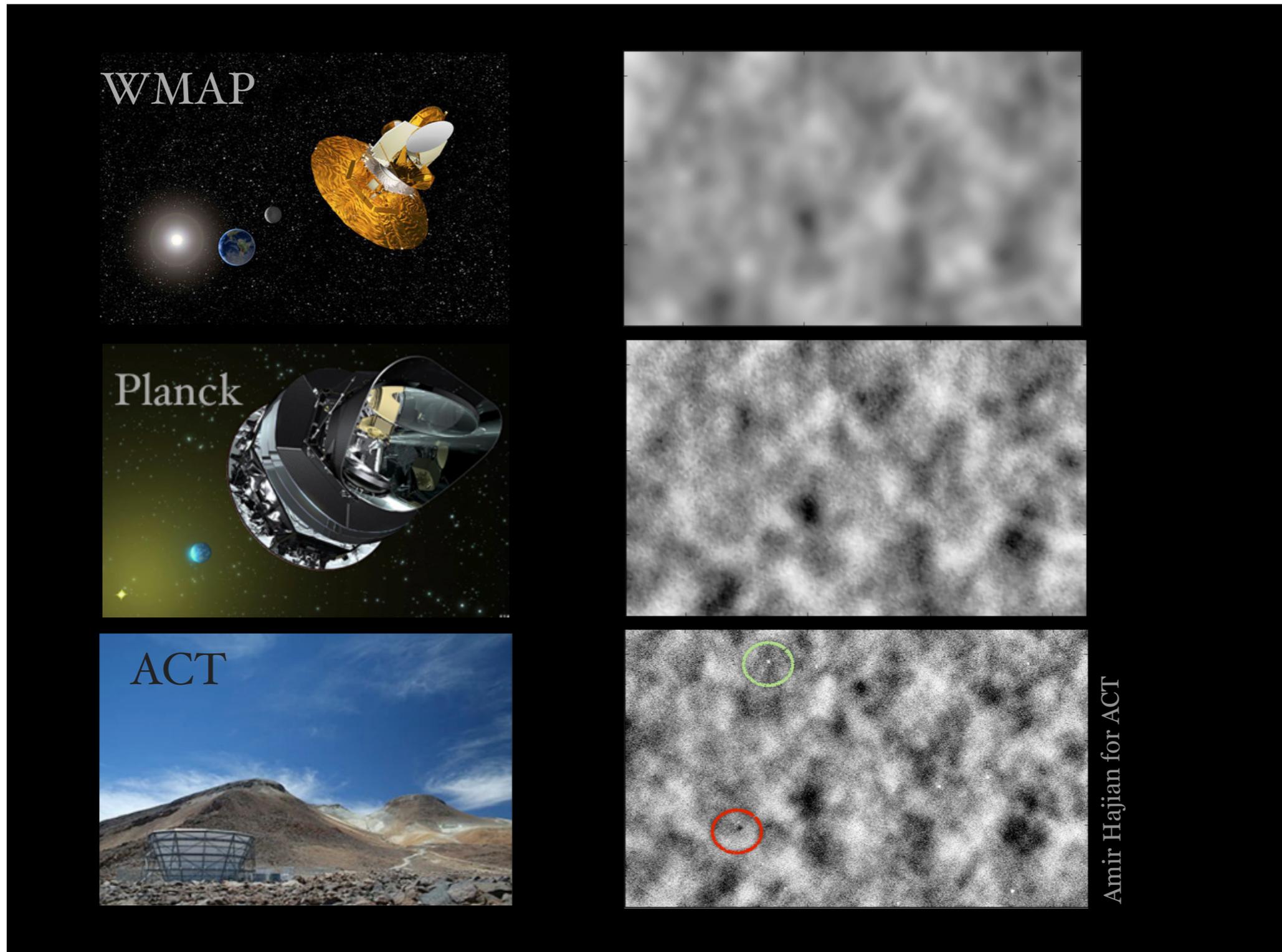
ACT VS PLANCK (Preliminary)



First direct detection of gravitational lensing !



Conclusion



Amir Hajian for ACT