

---

# X-rays in Mufasa and Simba

by Dylan Robson

---



---

# Mufasa

---

- Suite of Cosmological Hydrodynamical simulations
- Meshless Finite Mass (MFM)
- Conserves mass within evolving fluid elements.
- Uses many sub-grid prescriptions to model feedback etc.
- Quenching feedback simulated using phenomenological model.
- Presents a few key problems.



---

# Simba

---

- Simba builds upon MUFASA by improving various feedback models.
- Blackhole formation and accretion is simulated using a torque limited accretion model
- Model motivated by radiative and jet mode feedback seen in AGN.
- Romeel will go into more detail about Simba tomorrow.



---

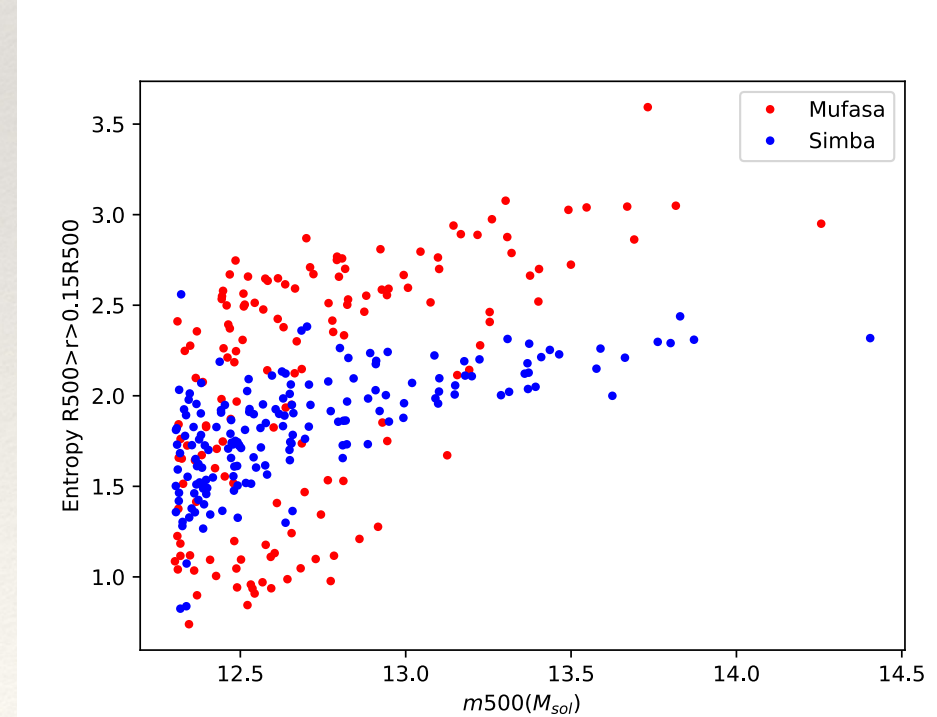
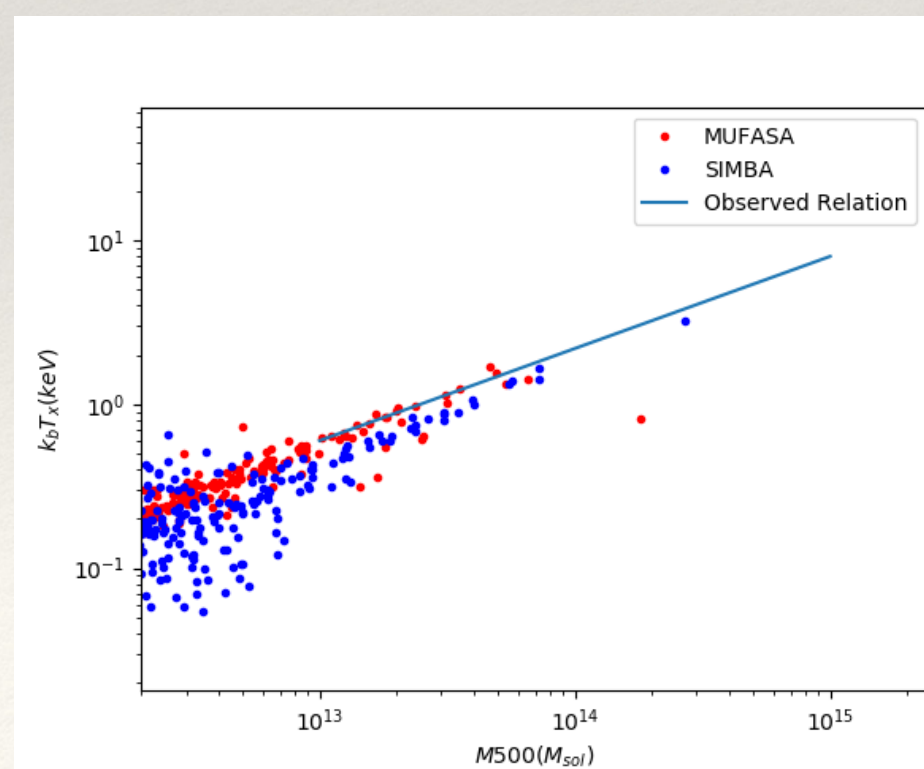
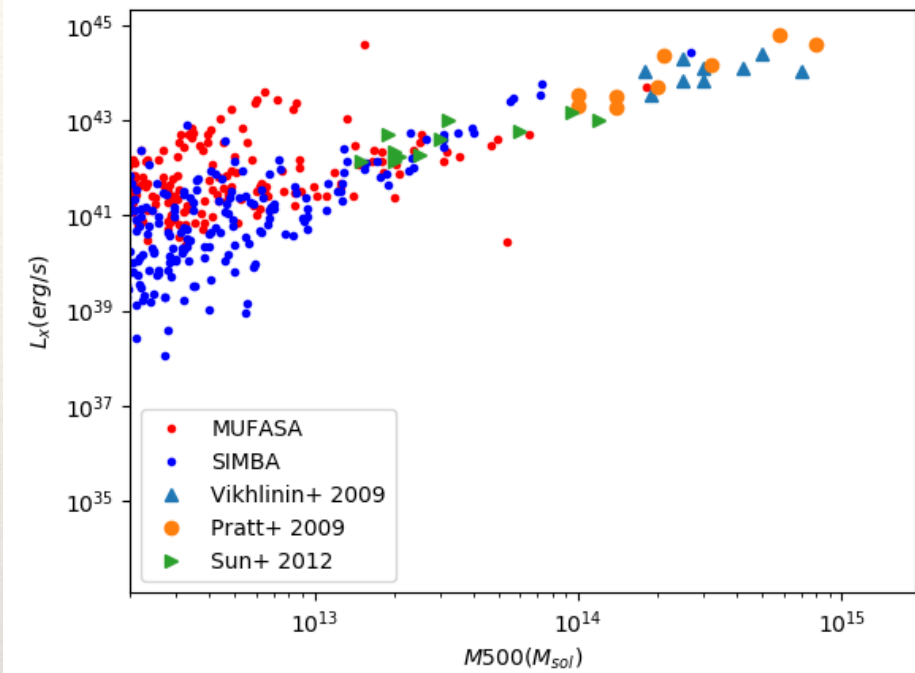
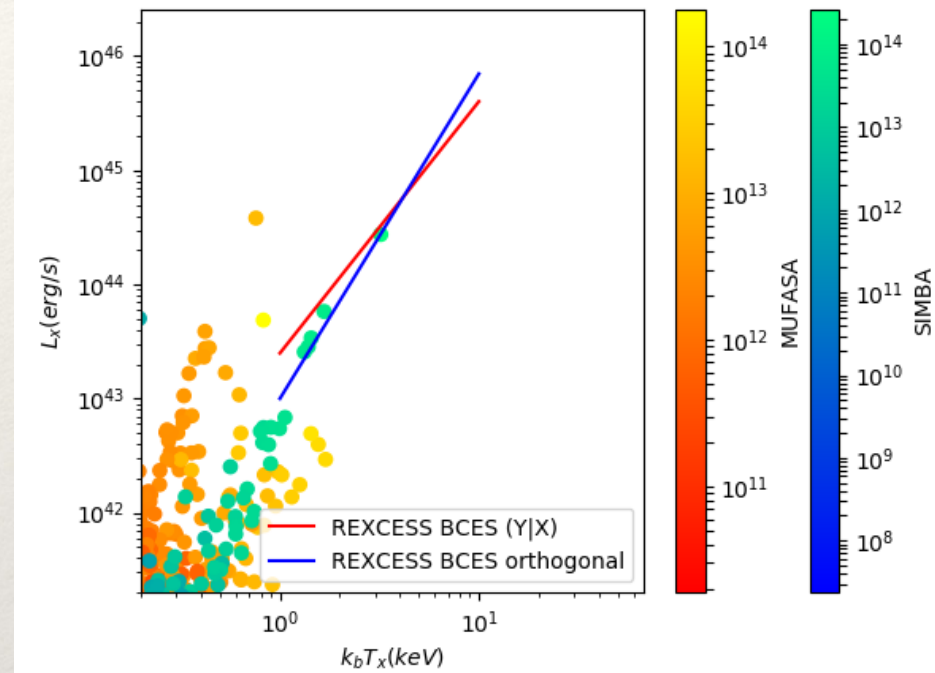
# Why X-Rays?

---

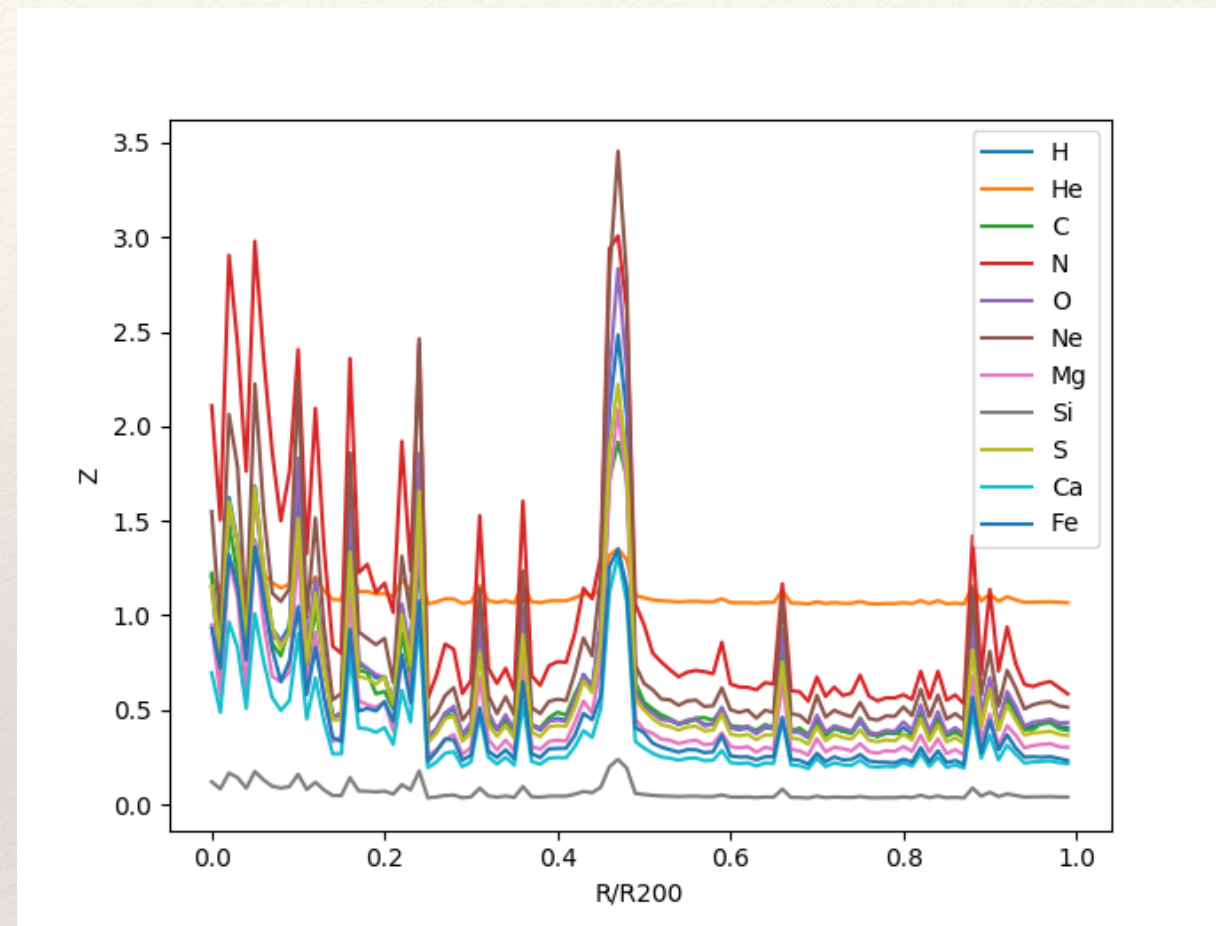
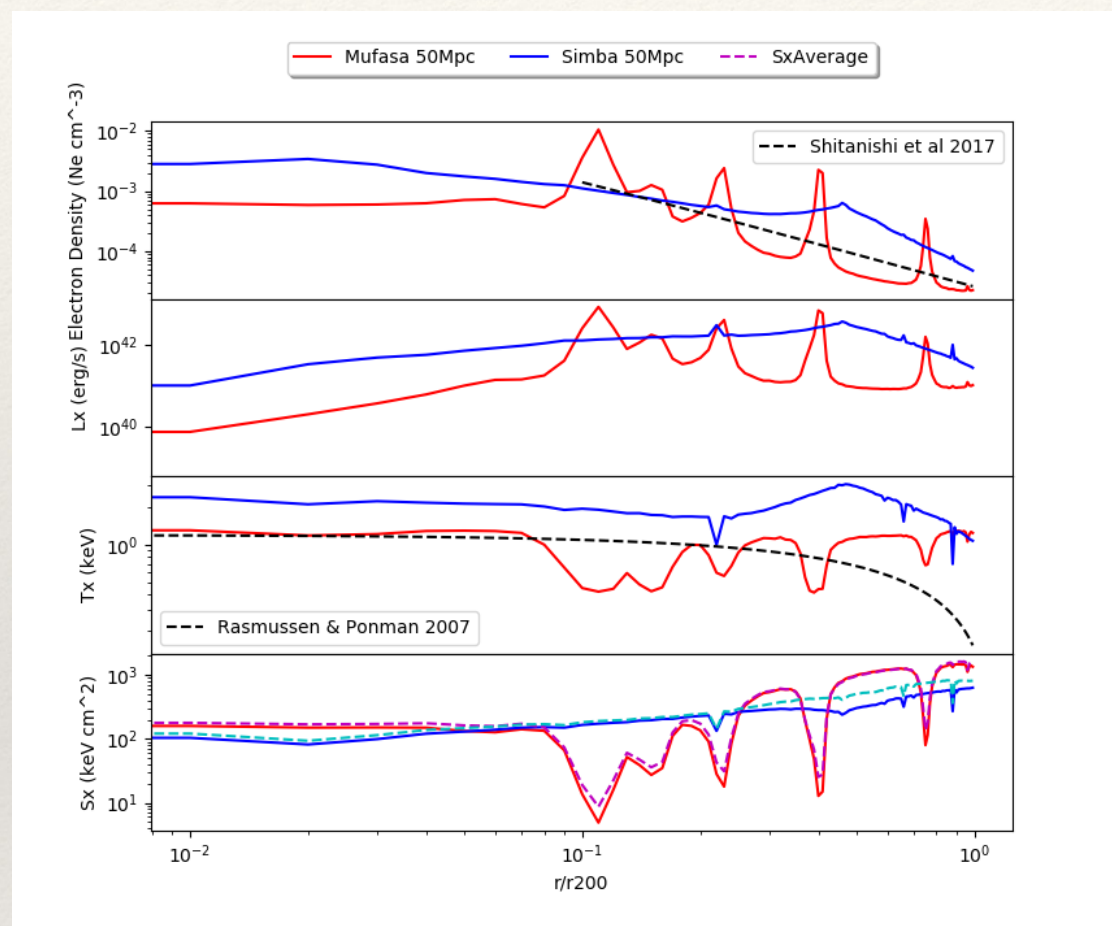
- Unambiguous signal of a true potential well
- Since X-ray Flux scales with density squared, x-ray sources stand out against background.
- Flux limited so gives precise survey volume.
- While these are not so relevant to simulations, the use of X-rays in observations motivates our investigations in simulations, for closer comparison and as a result more accurate predictions.



# Scaling Relations?



# Profiles





---

# Mock Observations

---





---

# Conclusion

---

- Investigating X-ray production in simulations allows for close comparison to observations.
- Simba appears to improve upon Mufasa in recreating certain scaling relations.
- The use of Mock observations may allow us to investigate how effective a given telescope set up may be in future research



Questions?