Evolution of Structure and AGN

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Major Science Questions

- How do the populations and properties of AGN evolve over time?
- What is the connection between BH growth and the evolution of galaxies?
- How do these results compare for X-ray AGN and optical/radio/infrared AGN?

- When do the earliest groups and clusters appear, and how do these populations grow with time?
- How do their thermodynamic properties and metal content evolve?

- What is the connection between large-scale structures and galaxy/BH evolution, and what physical processes drive this evolution?
- Are AGN or SF triggered and/or quenched in group/cluster environments?
- What processes drive this triggering/quenching?

Major Science Questions

- How will these measurements impact cosmology?

Most of these questions are already topics of active investigation with Chandra and multi-wavelength facilities.

Synergies in required observations

- Most of our major science questions will be **uniquely** addressed with X-ray Surveyor* [spatial resolution, collecting area, FOV]

- Each observation will simultaneously address many goals.

- Strong synergies with multiwavelength projects (including LSST, WFIRST, SKA, ALMA ..)

* WFI will be primary instrument [spatial resolution, FOV] although studies of cluster thermodynamic structure and metal content will require calorimeter observations.

SWG membership status

- Currently 14 applicants to EOSAA working group.
- Applicants include individuals with ongoing research activity and expertise in all major science areas.
- ~30 additional potential names identified today

Coordination with other WGs essential

- Strong overlap with First Accretion Light working group (interface at z~4?)
- Overlap with Physics of Feedback. EOSAA will make statistical measurements of feedback.
- ...

Near term tasks and plans

- Decide on the most compelling major science goals for this SWG
- Quantitative projections of X-ray Surveyor impact w.r.t. major science goals, e. g. Fisher matrix predictions

- Discussion of nominal survey parameters.
- Understand likely multiwavelength coverage.
- Simulate luminosity functions, mass functions, correlation functions, host galaxy properties, obscuration, cluster AGN/hot gas separation, etc.