

Census of Black Hole Accretion

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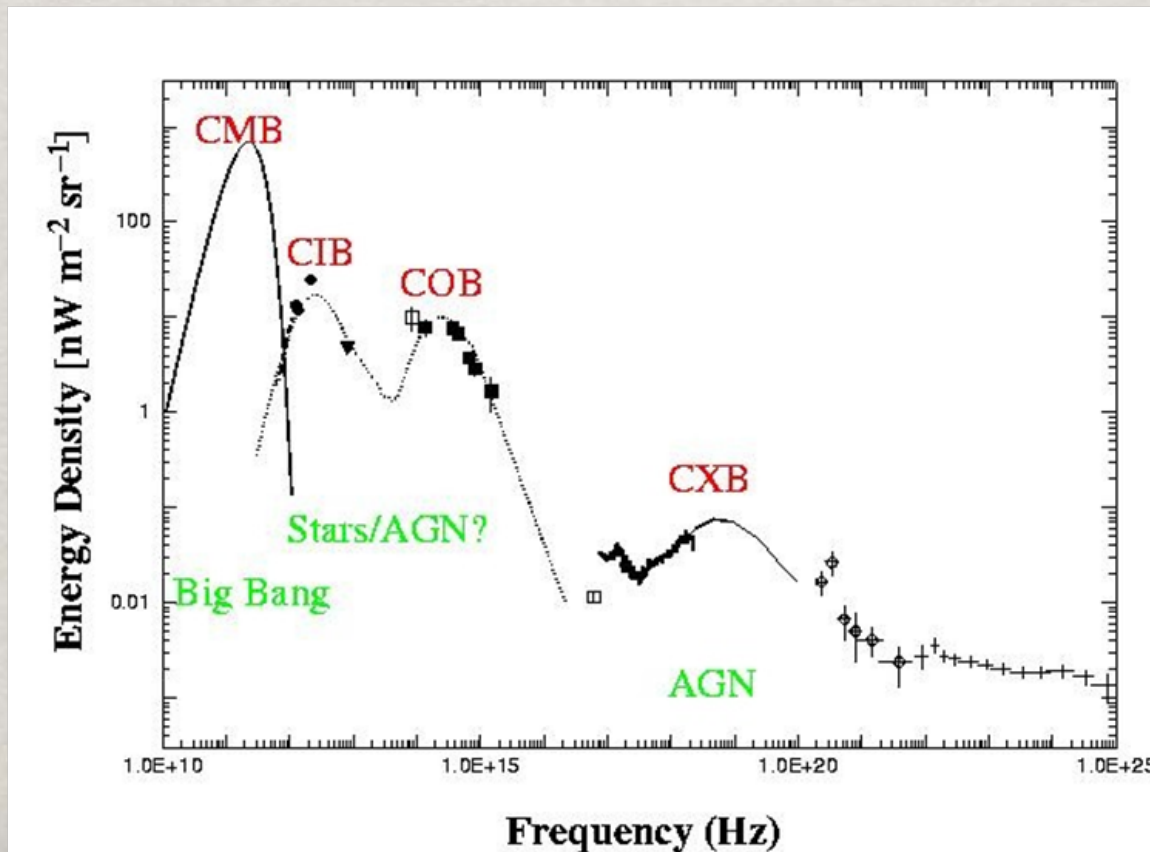
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Supermassive black holes and galaxies

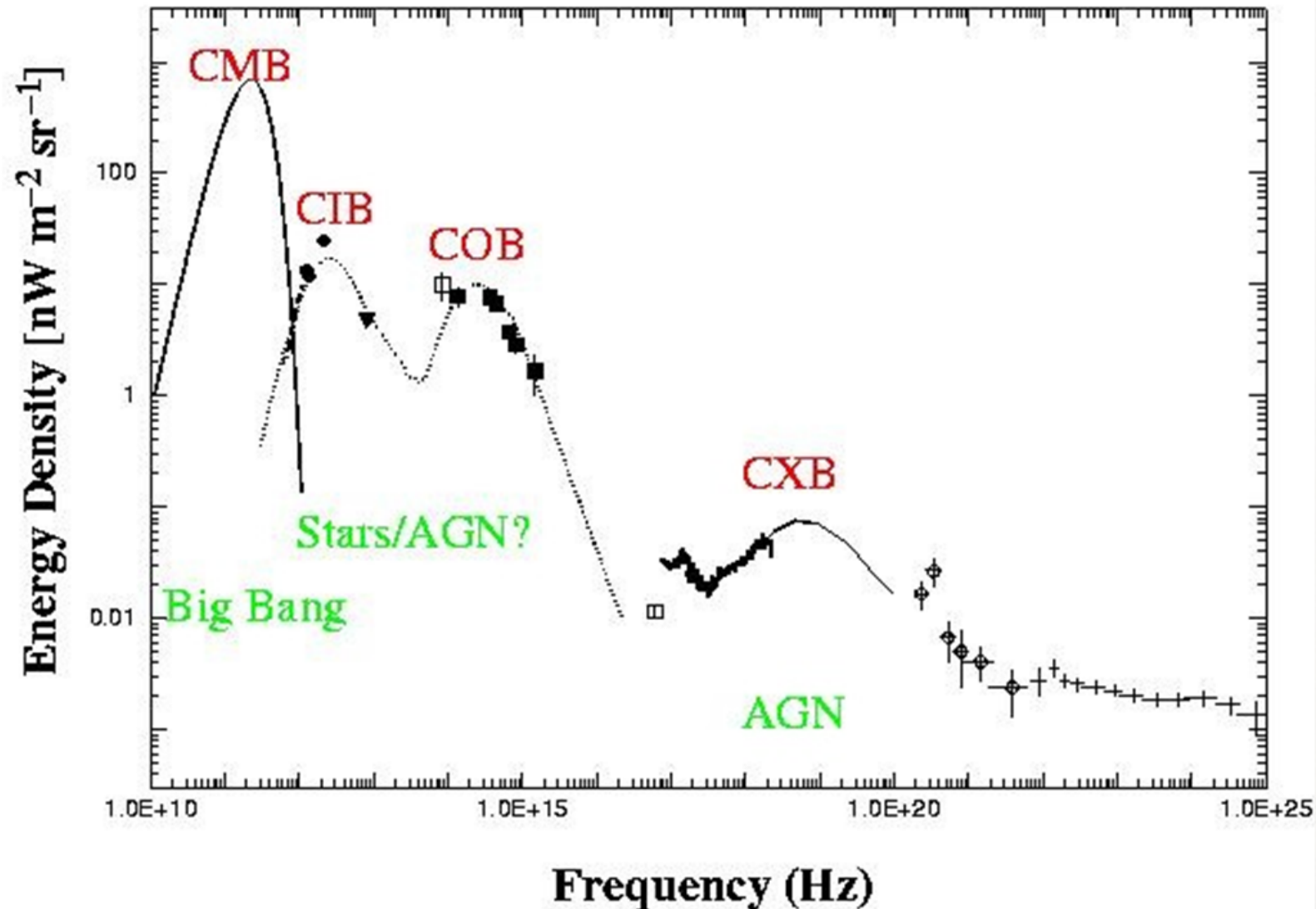
- $M_{\text{BH}} - \sigma$ relation
- AGN feedback results in cosmic downsizing
- X-rays reveal black hole growth phase
- AGN contribution to the cosmic energy budget



(Hasinger & Gilli 2002)

Supermassive black holes and galaxies

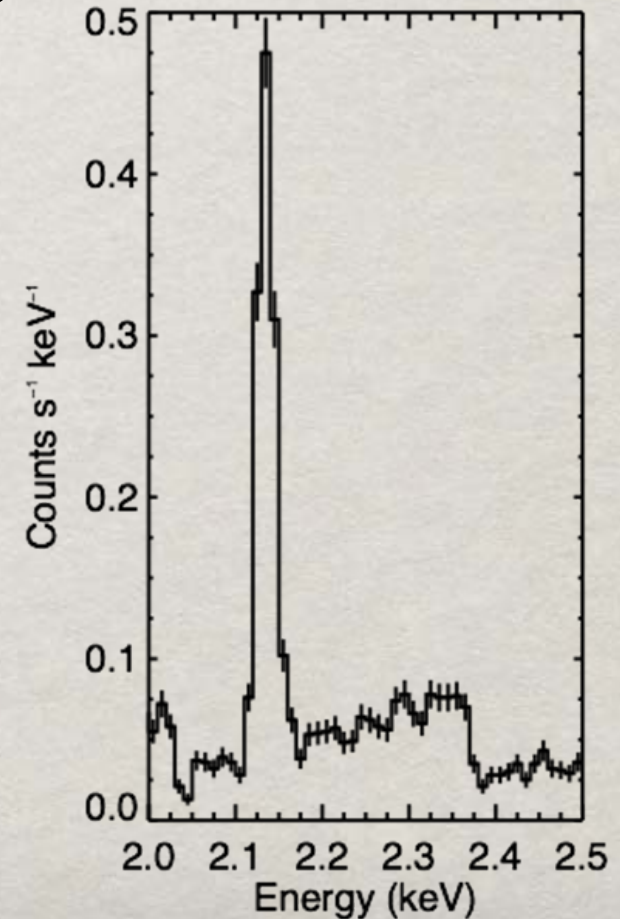
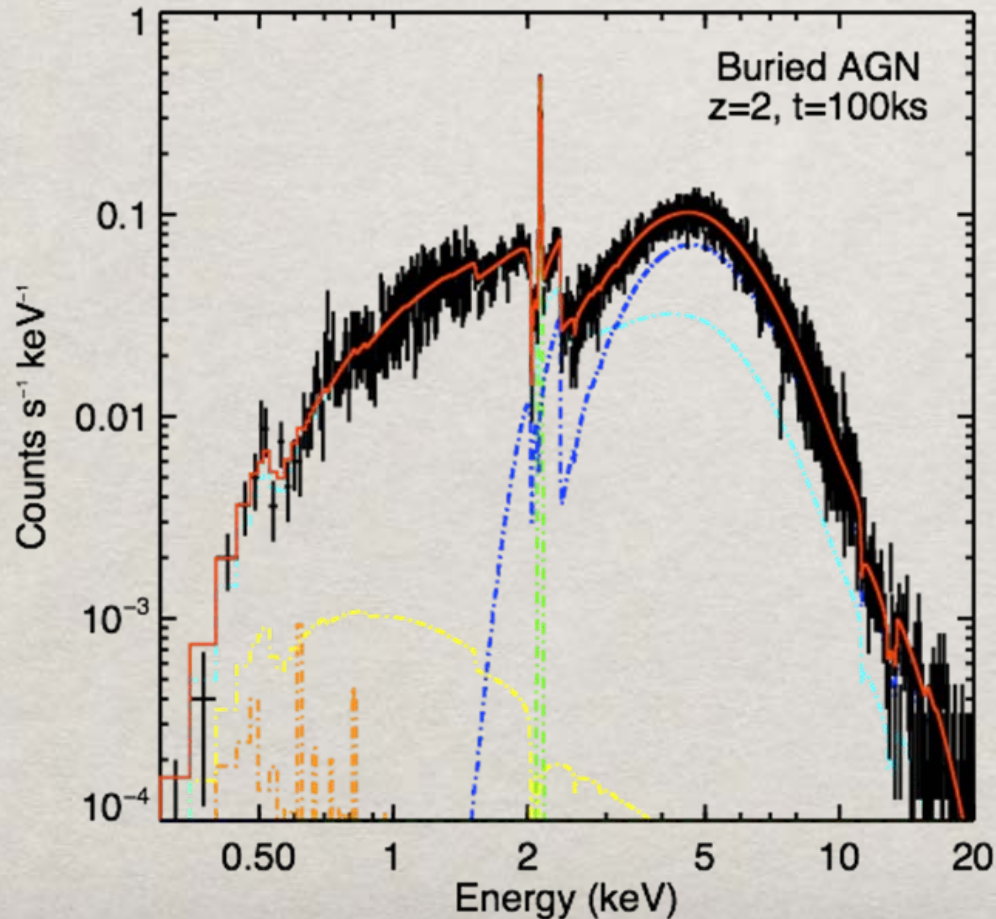
- AGN contribution to the cosmic energy budget:
X-ray background and infrared background



(Hasinger & Gilli
2002)

Compton thick AGN

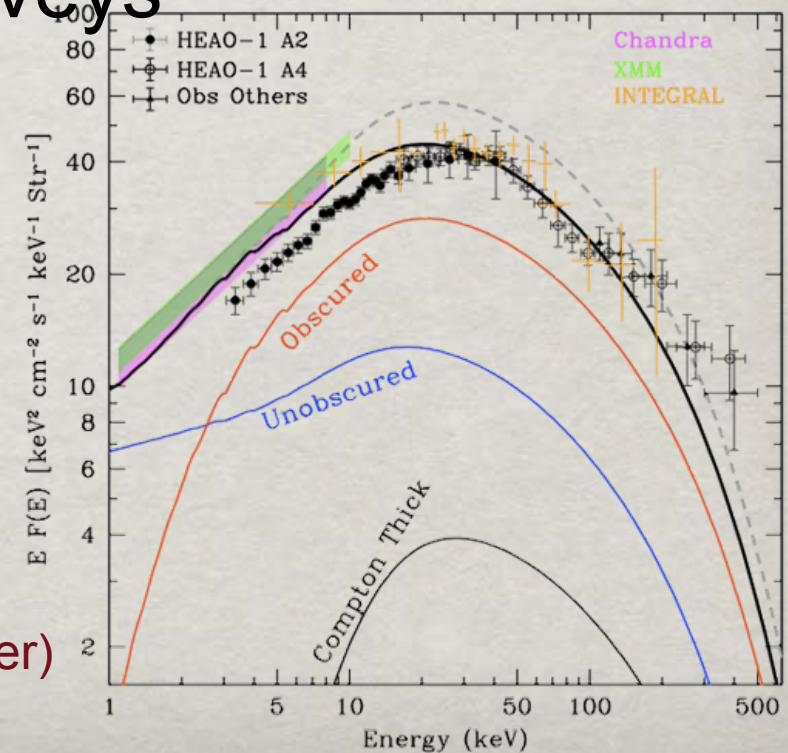
- Ultraluminous infrared galaxies: AGN or starburst?
- Fe K α for detection and AGN luminosity sensitivity for evolution $\sim(1+z)^4$
- ULIRG candidates from IR surveys



Compton thick AGN

While much of the XRB is resolved, 20 to 30% of the total AGN population may be Compton thick.

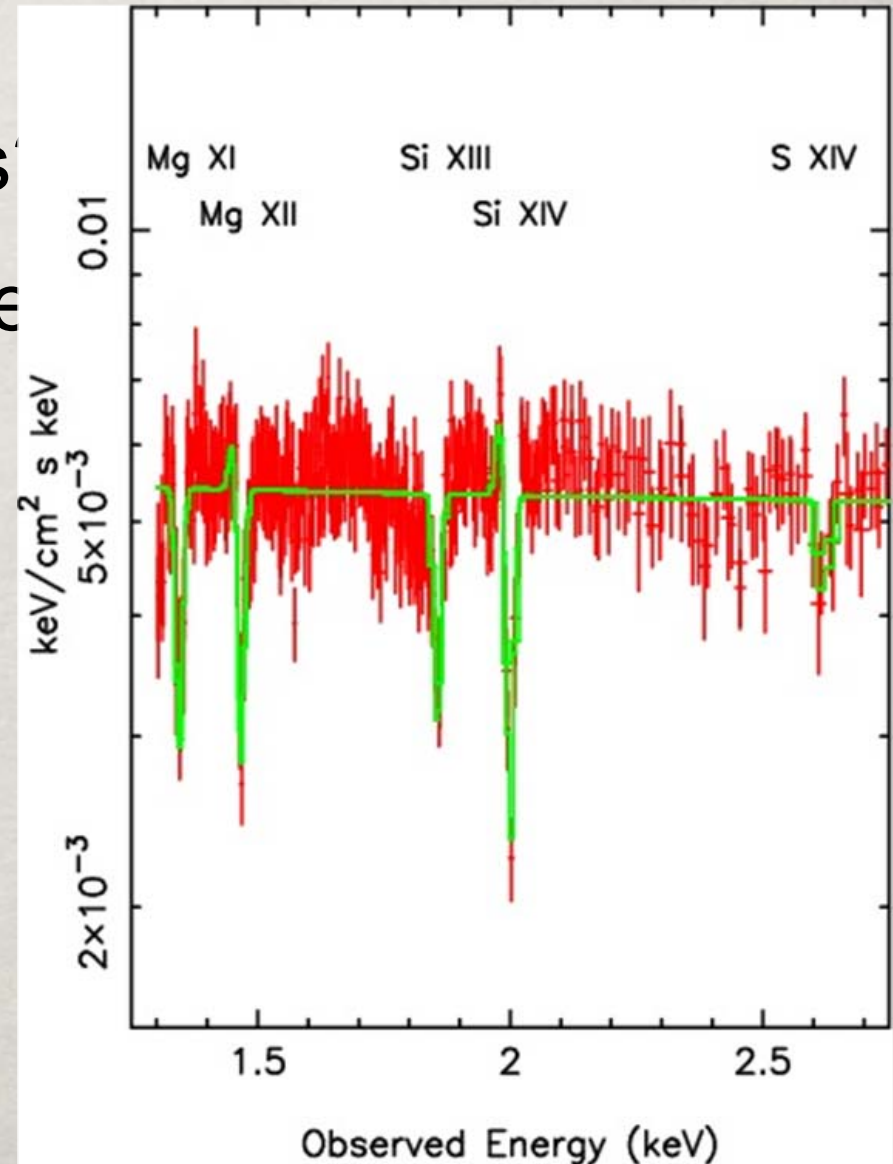
- What are the distributions of N_H and reflection? Are they functions of L_x or z ?
- Is the CT phase significant for BH growth?
- Candidates from hard X-ray surveys (NuSTAR, Simbol-X, NeXT)
Fe line measures z



(E. Treister)

Nearby AGN

- Physical information:
Eddington ratio, mass outflow rate, ionization states, reflection
- Quantify feedback in outflows
- Real surveys become feasible

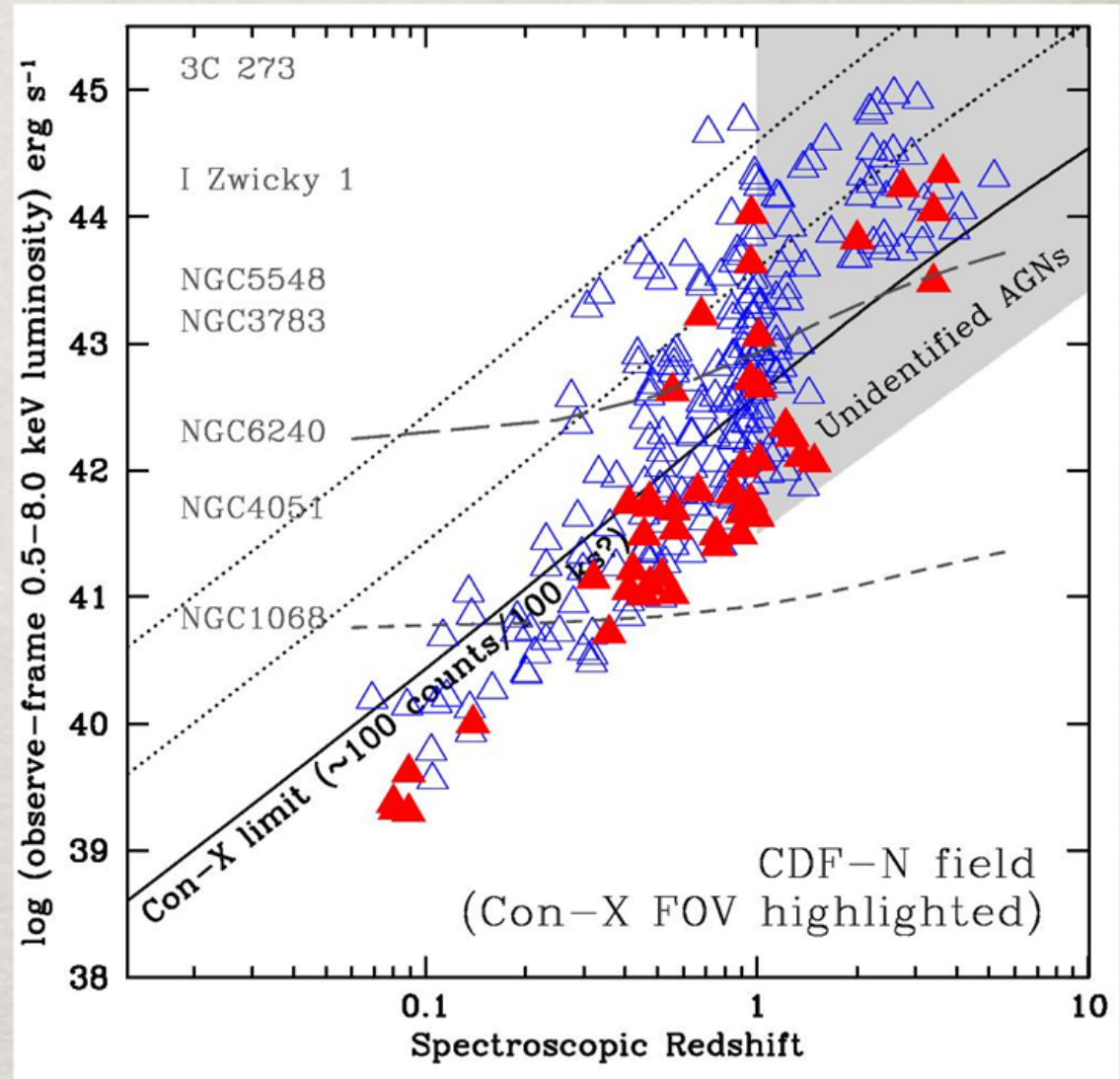


(Turner et al. 2008)

Wide field and sensitivity of IXO

- Current deep field detections become science targets

sources with spectra
only
▲ within 5' FOV



(D.
Alexander)

- More serendipitous detections